

# **The Lake Lothing (Lowestoft) Third Crossing Order 201[\*]**

---



Lake Lothing  
**THIRD  
CROSSING**

---

**Document 6.3: Environmental Statement  
Volume 3 Appendices**

## **Appendix 12B**

**Interpretative Environmental Ground  
Investigation Report**

---

*This page has intentionally been left blank*



Suffolk County Council

---

# LAKE LOTHING THIRD CROSSING

Interim Interpretative Environmental Ground  
Investigation Report





**Suffolk County Council**

---

# **LAKE LOTHING THIRD CROSSING**

Interim Interpretative Environmental Ground Investigation  
Report

**FIRST ISSUE – PUBLIC**

**PROJECT NO. 62240712**

**OUR REF. NO. 1069948-WSP-EGT-LL-RP-LE-0002**

**DATE: JUNE 2018**

WSP  
1st Floor Station House  
Tithebarn Street, Exchange Station  
Liverpool  
L2 2QP  
Phone: +44 151 331 8100

WSP.com

---



# CONTENTS

<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	TERMS OF REFERENCE	1
1.2	SCHEME DESCRIPTION	1
1.3	PROJECT SCOPE	2
1.4	LEGISLATIVE CONTEXT AND GUIDANCE	2
1.5	SOURCES OF INFORMATION	3
<b>2</b>	<b>SITE SETTING</b>	<b>4</b>
2.1	SITE DESCRIPTION AND CURRENT USE	4
2.2	SITE HISTORY	5
2.3	SURROUNDING LAND USES	6
2.4	POTENTIAL SOURCES OF CONTAMINATION	6
<b>3</b>	<b>GROUND INVESTIGATION</b>	<b>8</b>
3.1	PRELIMINARY CONCEPTUAL SITE MODEL	8
3.2	RATIONALE AND SCOPE	8
<b>4</b>	<b>GROUND CONDITIONS ASSESSMENT</b>	<b>10</b>
4.1	GROUND CONDITIONS ENCOUNTERED ON-SITE	10
4.2	MARINE SEDIMENT	12
<b>5</b>	<b>HYDROLOGICAL &amp; HYDROGEOLOGICAL CONDITIONS</b>	<b>13</b>
5.1	LOCAL HYDROLOGY	13
5.2	HYDROGEOLOGY	13
<b>6</b>	<b>QUANTITATIVE RISK ASSESSMENT</b>	<b>16</b>
6.1	INTRODUCTION	16
6.2	HUMAN HEALTH RISK ASSESSMENT	16

6.3	<b>CONTROLLED WATERS RISK ASSESSMENT</b>	<b>18</b>
6.4	<b>GROUND GAS ASSESSMENT</b>	<b>20</b>
6.5	<b>MARINE SEDIMENT SAMPLING</b>	<b>21</b>
6.6	<b>PILING RISK ASSESSMENT</b>	<b>22</b>
<b>7</b>	<b>WASTE ASSESSMENT</b>	<b>23</b>
<b>8</b>	<b>REFINED CONCEPTUAL SITE MODEL</b>	<b>24</b>
<hr/>		
8.1	<b>INTRODUCTION</b>	<b>24</b>
8.2	<b>PLAUSIBLE CONTAMINANT LINKAGES</b>	<b>24</b>
<b>9</b>	<b>CONCLUSIONS AND RECOMMENDATIONS</b>	<b>25</b>
<hr/>		
9.1	<b>GROUND CONDITIONS</b>	<b>25</b>
9.2	<b>ENVIRONMENTAL / CONTAMINATION ASSESSMENT</b>	<b>25</b>
9.3	<b>OUTLINE REMEDIAL MEASURES</b>	<b>26</b>
9.4	<b>CONSTRUCTION CONSIDERATIONS</b>	<b>26</b>

---

## ***TABLES***

Table 1 - Sources of Information	3
Table 2 - Summary of Site Details	4
Table 3 - Areas of Potential Contamination (APC)	6
Table 4 - Summary of Ground Investigation Intrusive Works	8
Table 5 – Summary of VOC Exceedances > 10ppm	11
Table 6 - Summary of Visual and Olfactory Evidence of Contamination	12
Table 7 - Summary of Ground Water Strikes during the Ground Investigation	13
Table 8 - Summary of Ground Water Level Monitoring in the north of the study area	14
Table 9 - Summary of Ground Water Level Monitoring in the south of the study area	15
Table 10 - Summary of Ground Gas Monitoring results	21
Table 11 - Summary of Plausible Contaminant Linkages	24

---

## ***FIGURES***

---

## **ANNEXES**

Annex A - Drawings

Annex B - Scope of Works

Annex C - Land Based Ground Investigation Factual Information

Annex C.1 - Engineers Logs

Annex C.2 - Gas and Groundwater Monitoring

Annex C.3 - Chemical Test Data

Annex D - Marine Sampling Factual Information

Annex D.1 - Sampling Locations

Annex D.2 - Chemical Test Data

Annex E - Human Health Risk Assessment Background Information

Annex F - Chemical Screening

# 1 INTRODUCTION

---

## 1.1 TERMS OF REFERENCE

- 1.1.1. An assessment of contaminated land including associated risks, constraints and liabilities has been undertaken to support a DCO application and design of the Scheme.
- 1.1.2. This interim report has been prepared with the ground investigation information available at the time of reporting. The Engineers logs in Annex C have not been finalised and the groundwater levels in Section 5.2.5 relate to the data collected during the first two groundwater monitoring visits. However, this report (and appendices 12A and 12C and chapter 12 of the ES) take account of the fact that groundwater was encountered during the ground investigation, and the results of sampling of that groundwater. The information to be added to section 5 will provide more detail of the groundwater encountered, but this will not affect the results of the assessment or the recommendations suggested. The report will be updated once this information is available.

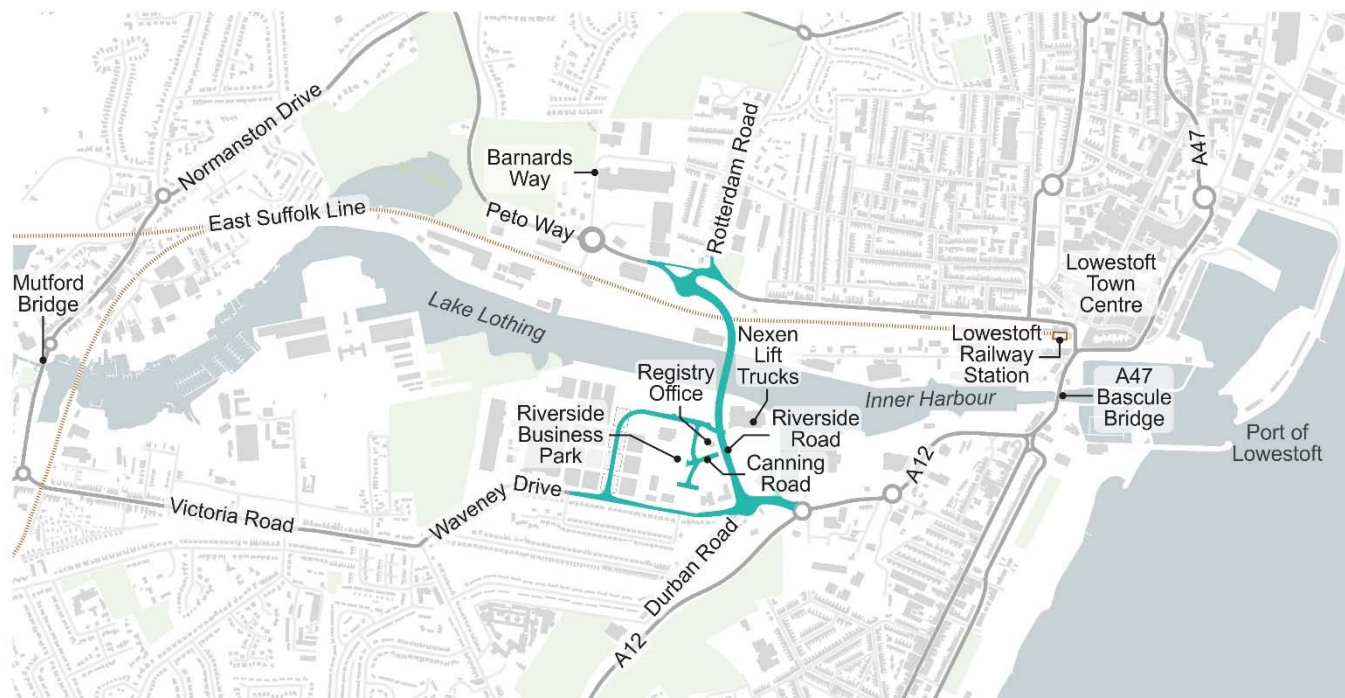
## 1.2 SCHEME DESCRIPTION

- 1.2.1. The scheme involves the construction, operation and maintenance of a new bascule bridge highway crossing linking the areas north and south of Lake Lothing in Lowestoft, hereafter referred to as the Lake Lothing Third Crossing ("the Scheme").
- 1.2.2. The Scheme would provide a new single-carriageway road crossing of Lake Lothing, consisting of a multi-span bridge with associated approach roads, and would comprise:
- An opening bascule bridge over the Port of Lowestoft, in Lake Lothing;
  - On the north side of Lake Lothing, a bridge over Network Rail's East Suffolk Line, and a reinforced earth embankment joining that bridge, via a new roundabout junction, to the C970 Peto Way, between Rotterdam Road and Barnards Way; and
  - On the south side of Lake Lothing, a bridge over the northern end of Riverside Road including the existing access to commercial property (Nexen Lift Trucks) and a reinforced earth embankment (following the alignment of Riverside Road) joining this bridge to a new roundabout junction with the B1531 Waveney Drive.
- 1.2.3. The Scheme would be approximately 1 kilometre long and would be able to accommodate all types of vehicular traffic as well as non-motorised users, such as cyclists and pedestrians.
- 1.2.4. The opening bascule bridge design would allow large vessels to continue to use the Port of Lowestoft.
- 1.2.5. A new control tower building would be located immediately to the south of Lake Lothing, on the west side of the new highway crossing, to facilitate the operation of the opening section of the new bascule bridge.
- 1.2.6. The Scheme would also entail:-
- The following changes to the existing highway network:
    - The closure of Durban Road to vehicular traffic at its junction with Waveney Drive;
    - The closure of Canning Road at its junction with Riverside Road, and the construction of a replacement road between Riverside Road and Canning Road to the west of the Registry Office; and
    - A new access road from Waveney Drive west of Riverside Road, to provide access to property at Riverside Business Park;
    - Improvements to Kimberley Road at its junction with Kirkley Run; and
    - Part-signalisation of the junction of the B1531 Victoria Road / B1531 Waveney Drive with Kirkley Run.
  - The provision of a pontoon for use by recreational vessels, located to the east of the new highway crossing, within the Inner Harbour of Lake Lothing; and
  - Works to facilitate the construction, operation and maintenance of the Scheme, including the installation of road drainage systems; landscaping and lighting; accommodation works for accesses to premises; the diversion and installation of utility services; and temporary construction sites and access routes.
- 1.2.7. The works required for the delivery of the Scheme are set out in Schedule 1 to the draft DCO (application document reference 3.1), where they are referred to as "the authorised development", with their key component parts being allocated reference numbers, which correspond to the layout of the numbered works



as shown on the Works Plans (application document reference 2.4). The General Arrangement Plans (application document reference 2.2) illustrate the key features of the Scheme.

1.2.8. The figure below provides a diagrammatic representation of the Scheme:



**Figure 1 - Location of the Scheme in Lowestoft**

## 1.3 PROJECT SCOPE

1.3.1. To assist in meeting the terms of reference at stated in Section 1.1, the scope of the study reported on in this report comprised:

- Land based site investigation carried out between July 2017 and April 2018.
- Post site works gas and groundwater monitoring and water sampling.
- Laboratory chemical analysis of recovered soil samples and groundwater samples.
- Marine sampling of lake bed sediments and surface water samples from within Lake Lothing.
- Generic quantitative risk assessment (GQRA) of potentially sensitive receptors with respect to ground and groundwater contamination.
- Refinement of the preliminary conceptual site model (CSM) that was developed in the WSP Ltd (formerly Mouchel Ltd) Environmental Desk Study Report (presented as Appendix 12A to the Environmental Statement).
- Piling Works Risk Assessment (presented as Appendix 12C to the Environmental Statement)
- Provision of recommendations with respect to the management and mitigation of potential ground contamination constraints or liabilities which are identified.

1.3.2. A geotechnical assessment has also been undertaken for outline pile foundation and highway design purposes which will be reported separately.

## 1.4 LEGISLATIVE CONTEXT AND GUIDANCE

1.4.1. The project was undertaken in the legislative and policy context of:

- The Planning Act 2008
- National Policy Statement for National Networks
- National Policy Statement for Ports
- The National Planning Policy Framework (2012)

1.4.2. The following good practice and statutory guidance was considered and the contaminated land assessment was undertaken in general accordance with:

- Environment Agency 'Model Procedures for the Management of Land Contamination', CLR11 (2004)
- British Standard 'Investigation of Potentially Contaminated Sites – Code of Practice', BS EN 10175:2011
- British Standard 'Code of Practice for Ground Investigations', BS 5930:2015
- CIRIA 'Contaminated Land Risk Assessment. A guide to good practice', C552 (2001)
- Defra 'Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance', PB13735 (2012)
- CIRIA 'Assessing Risks Posed by Hazardous Ground Gases to Buildings', C665 (2007)

## 1.5 SOURCES OF INFORMATION

1.5.1. The following relevant sources of information were used in the production of this report. Information from these sources relating to the underlying ground conditions has also been included in Sections 2, 3, 4 and 5 of this report, where appropriate:

**Table 1 - Sources of Information**

Source	Report
Reports	Environmental Desk Study Report dated June 2018 (presented as Appendix 12A to the Environmental Statement)
Public Information	British Geological Survey BGS 'Geology of Britain' online viewer. Environment Agency website
Notes:	The report contains British Geological Survey materials ©NERC 2017 and Environment Agency information ©Environment Agency and database right.

## 2 SITE SETTING

### 2.1 SITE DESCRIPTION AND CURRENT USE

- 2.1.1. For the purposes of this report, the site is defined as the order limits as defined in the Application.
- 2.1.2. The site is currently occupied by highways, vacant land and commercial / industrial businesses. Further details are provided in the Environmental Desk Study Report (presented as Appendix 12A of the Environmental Statement).
- 2.1.3. Table 2 below summarises the site details presented in the Environmental Desk Study Report.

**Table 2 - Summary of Site Details**

Detail	Comment
Site Location	The irregular shaped site is located in the centre of Lowestoft to the north and south of Lake Lothing. The site is bounded to the south by Waveney Drive and to the north by Denmark Road. In the south east, the boundary is marked by the roundabout junction between the A12 and Waveney Drive and also the adjacent dock area. In the south west, the boundary is within a former industrial site immediately to the west of the Waveney District Council offices. In the north east, the boundary is at the end of Commercial Road and in the north west, the boundary is at the roundabout junction between Denmark Road and Peto Way.
National Grid reference	653884, 292755 (centre of the site)
Site Description and Current Use	The southern area of the site comprises highways (including Waveney Drive, Riverside Road and Canning Road); a commercial property, residential properties, hard standing including car parking and areas of derelict land including a dock wall. The northern area of the site comprises highway (including Denmark Road), part of a Wickes DIY store, railway land including track and sidings; hard standing including quayside and areas of derelict land. The centre of the site comprises the Lake Lothing watercourse and docks.
Area	Approximately 21 hectares
Site Setting and Surrounding Area	North; residential properties, small commercial / industrial park and a small play park East; Commercial Park, industrial area associated with the port / quayside, the East Suffolk Rail Lines and residential properties. South; residential properties and a small commercial park. West; derelict land, port / quayside industrial land and commercial properties.
Topography and Ground Cover	The site is generally flat with a slight increase in height at the northern boundary. The ground cover is largely hard standing.
Drainage & Flooding	The Lake Lothing watercourse is recorded as a Primary River and there is a culverted watercourse beneath the south east part of the site. Much of the site is within the Zone 3 and Zone 2 floodplains. The risk of flooding from the river and the sea varies from high in the centre of the site to medium and low towards the edges of the site.
Embankments & Slopes	None of any significance.
Trees & Vegetation (including invasive species)	The only vegetation recorded during the walkover were landscaping hedges and bushes / scrub on the vacant sites. No invasive species were confirmed during the walkover, although due to access restrictions at some locations, not all of the site was accessible. Ecological surveys have been undertaken and are reported in Chapter 11 of the Environmental Statement.

Detail	Comment
Foundations, Retaining Walls & Basements Evident on site	There is the significant possibility of foundations, retaining walls and basements being present on site due to former buildings, particularly adjacent to the Lake Lothing.
Visual Observations of Contamination or Ground Subsidence	No visual signs of contamination were noted during the site walkover although the Environmental Desk Study report highlights the adjacent Council offices site was remediated for asbestos prior to construction and the Northumbrian Water offices site had hydrocarbon remediation undertaken, both to the satisfactory of the Regulators.
Geology	<p>The regional BGS 1:50,000 geological map and information available on the BGS on-line Geology of Britain Viewer (<a href="http://www.bgs.ac.uk">www.bgs.ac.uk</a>) indicates the area of the Order Limits occupied by Lake Lothing is underlain by Tidal River or Creek Deposits of clay and silt. Immediately adjacent to the Lake are alluvium deposits comprising clay, silt, sand and gravel. Beyond this towards Denmark Road in the north and Waveney Drive in the south the site is underlain by sand of the Happsburgh Glacigenic Formation.</p> <p>The BGS 1:50,000 geological map indicates that the Crag Group (sand) comprises the underlying geology across the site.</p>
Hydrogeology and Hydrology	<p>Lake Lothing splits the Order Limits in two and is recorded as a Primary River. At this point it is estuarine and is not separated from the sea by any locks. No other surface water features are present.</p> <p>No surface water or potable water abstractions are present within 2km of the Order Limits.</p> <p>The superficial deposits underlying the Order Limits are classified as a Secondary (A) Aquifer with permeable layers. These are defined by the Environment Agency as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.</p> <p>The underlying bedrock is classified as a Principal Aquifer. These are defined by the Environment Agency as layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.</p> <p>The nearest active groundwater abstraction is approximately 1,300m to the north west of the Order Limits.</p>

## 2.2 SITE HISTORY

2.2.1. The following site history summary has been taken from the Environmental Desk Study Report which includes a more detailed site history.

### NORTHERN SITE AREA

2.2.2. The earliest map provided by GroundSure dated 1883 indicates the site to be predominantly agricultural land with some small buildings and a railway line adjacent to the waterfront area.

2.2.3. Some industrial development occurred in the early 1900's including a railway and associated land through the centre of the site and timber yard at the western end. However, no significant changes occurred until the 1970's when most of the railways had been dismantled and by 1992, a new road (Peto Way) had been constructed through the site.

### SOUTHERN SITE AREA

2.2.4. The earliest map provided by GroundSure dated 1883 indicates the site to be predominantly agricultural land with marsh and mudflats. By the early 1900's, many of the mudflats are no longer marked and formal waterfront wharfs appear to be present in the waterside area. Some industry is present including unlabelled

works. By 1926 industrial development including a railway spur line had occurred across a large part of the site. The site remained largely industrial, including canning and processing works, ice works and boatbuilding until circa 2002 when the access roads for Riverside Business Park were constructed.

## 2.3 SURROUNDING LAND USES

2.3.1. Surrounding the northern site area are;

- The North Quay Retail Park,
- An industrial estate, containing numerous depots and factories,
- Unspecified tanks and depot facilities are recorded on the north shore of Lake Lothing,
- Hopper silos
- Residential housing

2.3.2. Surrounding the southern site area are;

- Unspecified factories or works
- Dock and wharf facilities
- Hopper silos
- Pumping station
- Petrol stations
- Residential housing

## 2.4 POTENTIAL SOURCES OF CONTAMINATION ON-SITE CONTAMINATION SOURCES

2.4.1. The following potential historical on-site sources of contamination have been identified with anticipated contaminants derived in accordance with site-specific interpretation of Department of Environment Industry Profiles:

**Table 3 - Areas of Potential Contamination (APC)**

APC No.	APC Type	Anticipated Contaminants in Soil & / or Groundwater
APC1	Former railway lines, sidings and depots	Metals and metalloids, cyanides, ammonia, nitrates, sulphates and sulphides involved in a range of chemical processes formerly taking place on site. It is likely these contaminants are present within the soil although some compounds are soluble and therefore may also be present with the groundwater and soil leachate samples. Petroleum hydrocarbons (TPH), PCBs, benzene, toluene, ethylbenzene, xylene (BTEX), polyaromatic hydrocarbons (PAH), Volatile Organic Compounds (VOC) and semi-VOC (SVOC), phenolic compounds, resins arising from fuel spillages and former onsite chemical processes. It is likely these compounds if present will be found within groundwater and leachate samples. Some of the volatile compounds such as solvents may be present as mobile gases. Made ground associated with the development of the site for its former industrial uses resulting in potential ground gas contaminants (methane and carbon dioxide). Ground gases are considered likely in the former landfill areas. Made ground also has the potential to contain asbestos. The presence of buried former structures and foundations may also be a source of contaminants.
APC2	Former timber yard	
APC3	Former ship yards and dock works including above ground storage tanks	
APC4	Former coal yard and depot	
APC5	Former Raglan preservatives and ice works	
APC6	Former allotments	
APC7	Former landfill/refuse tip and spoil areas	
APC8	Former depots	
APC9	Potentially contaminated silts	

## OFF-SITE CONTAMINATION SOURCES

2.4.2. Within the surrounding area, the following potential sources of contamination are identified in the GroundSure report (Annex B of the Environmental Desk Study Report) that could migrate onto the site are:

- Former and current shipbuilding and dock works surrounding Lake Lothing
- Former oil mill to the east of the site
- Former electric light works to the north of the site
- Former tram depot to the north of the site
- Former coal yard to the west of the site
- Former creosoting factory to the west of the site
- Former iron works east of the site
- Contaminated silts within Lake Lothing
- Former bus building factory to the north of the site
- Former gasworks to the south east.

### 3 GROUND INVESTIGATION

#### 3.1 PRELIMINARY CONCEPTUAL SITE MODEL

3.1.1. The preliminary conceptual site model (CSM) from the Environmental Desk Study Report identified a number of potential contaminant sources which are summarised in Section 2.4. The preliminary CSM also identified a number of plausible contaminant linkages (PCLs) that, without necessary protection and/or remediation, could put the following identified receptors at risk of significant exposure:-

- Site users - Future site users, visitors and maintenance workers.
- Adjacent site users - Residents and users of nearby properties
- Controlled waters - Principal and Secondary (A) aquifers and surface watercourses
- On site infrastructure - Buildings, foundations and buried services.
- Marine Ecology - Vertebrates and invertebrates within Lake Lothing

#### 3.2 RATIONALE AND SCOPE

3.2.1. The rationale for the site investigation scope was to provide geotechnical and geo-environmental information for design and to inform the DCO process. The scope was developed to also provide information to refine the preliminary Conceptual Site Model outlined in the Environmental Desk Study Report presented as Appendix 12A to the Environmental Statement.

3.2.2. The main ground investigation works were land based but some water and sediment sampling works were also carried out in Lake Lothing itself and for distinction are referred to as marine investigation works.

3.2.3. Further details on the scope of works are presented in Annex B.

##### LAND BASED GROUND INVESTIGATION

3.2.4. The land based ground investigation was undertaken by the Applicants appointed contractor, Geosphere Ltd between 24<sup>th</sup> July 2017 and 25<sup>th</sup> April 2018. The geo-environmental aspects of the investigation are reported here for the purposes of the design and the DCO process and comprised the following:-

- Cable percussion boreholes
- Machine excavated trial pits
- Window Samples
- Hand dug trial pits / inspection pits
- Installation of gas and groundwater monitoring wells in selected boreholes
- Soil sampling from the boreholes, trial pits and window samples for the purpose of chemical testing
- Gas and groundwater monitoring and groundwater sampling and chemical testing following completion of the intrusive works

3.2.5. In addition to the above, cone penetration testing and CBR (California Bearing Ratio) testing was also undertaken for the purposes of geotechnical assessment and will be reported separately by the WSP Ltd Geotechnical team.

3.2.6. The as-built exploratory hole locations are presented on Drawing 1069948-WSP-ENG-LL-SK-LE-0020 – Sampling Locations Regulations 5(2)(a) Figure 12.2. Table 4 presents the scope of geo-environmental intrusive works undertaken.

**Table 4 - Summary of Ground Investigation Intrusive Works**

Exploratory Hole Type	Reference	Depth	Purpose
29 Cable Percussion Borehole	BHC	2.9m – 50m	General site conditions and also targeting deeper ground conditions.
17 Machine excavated Trial Pits	TPC	1.5m – 3.2m	General site conditions where deep ground condition information is not required.
14 Window Samples	WSC	0.75m – 5.0m	Window samples were added during the works at locations where boreholes were to be drilled at a later date for the

Exploratory Hole Type	Reference	Depth	Purpose
			purpose of gaining information from the shallow ground conditions earlier in the programme.
5 Hand Dug Trial Pits	IPC	1.2m - 1.5m	Inspection pit extended from 1.2m depth with hand auger equipment to avoid the use of percussive equipment in areas where buried services were suspected.

3.2.7. The scope of the field works and chemical testing suites are discussed in further detail in Annex B. The findings of the ground investigation are discussed in Sections 4 to 7 and inform the refined conceptual site model which is presented in Section 8.

### MARINE BASED SAMPLING

3.2.8. The marine based sampling was carried out by CMS-Geotech Ltd between 9<sup>th</sup> April 2018 and 23<sup>rd</sup> April 2018 as a separate contract to the land based ground investigation. This work was primarily to inform the sediment modelling assessment undertaken by WSP Ltd and is reported separately (Appendix 17C to the Environmental Statement), but the following aspects were included to support this Interpretative Environmental Ground Investigation Report for the purposes of assessing whether the lake bed sediments are contaminated and to assess potential offshore or onshore disposal routes for any excavated sediments. The marine sampling comprised the following:-

- Surface water sampling at four locations from Lake Lothing waterbody,
- Sampling of sediments from below the lake bed level at nominal 1m intervals to 4m depth from 12 vibrocore locations,
- 48 grab samples from the top layer of lake bed sediments.

3.2.9. The scope of the marine based sampling works and chemical testing suites are discussed in further detail in Annex B. Factual information provided by CMS-Geotech Ltd comprising chemical test results and vibrocore logs is presented in Annex D. The assessment of the chemical test results is discussed in Section 6 and is used to inform the refined conceptual site model which is presented in Section 7.



## 4 GROUND CONDITIONS ASSESSMENT

---

### 4.1 GROUND CONDITIONS ENCOUNTERED ON-SITE

- 4.1.1. The exploratory hole locations are presented on Drawing 1069948-WSP-ENG-LL-SK-LE-0020 – Sampling Locations Regulations 5(2)(a) Figure 12.2 presented in Annex A and the exploratory logs are provided in Annex C.1.
- 4.1.2. The findings summarised below generally confirm the anticipated strata identified in the Environmental Desk Study Report (presented as Appendix 12A to the Environmental Statement).

#### MADE GROUND NORTHERN SITE AREA

- 4.1.3. Made ground was recorded at all exploratory hole locations and varied in thickness from 0.6m to 3.6m, although the base of the made ground in BHC06A was not found at 2.9m depth and may therefore be deeper. The made ground was generally granular and heterogeneous in nature and was composed of detritus including concrete, charcoal, clinker, brick, tile, metal (including reinforcing bar), ash, asphalt, glass, wood, soot, pottery and cast iron.
- 4.1.4. The thickness of made ground varied across the site with no particular areas recording thicker made ground than others. It was expected that the thickest made ground would be encountered closest to the Lake Lothing quay walls where ground levels were expected to have been raised to create the quayside but this was not indicated on the Draft Engineers logs.

#### MADE GROUND SOUTHERN SITE AREA

- 4.1.5. Made ground was recorded at all exploratory hole locations and varied in thickness from 0.75m to at least 3.7m, although this same location (BHC13 located close to the southern side of Lake Lothing) recorded possible made ground to in excess of 6.0m depth). The made ground was generally granular and heterogeneous in nature and was composed of detritus including concrete, charcoal, clinker, brick, tile, metal (including reinforcing bar), ash, asphalt, glass, wood, soot, pottery and cast iron. Fragments of potential asbestos containing materials were recorded at TPC23 close to the Council offices.
- 4.1.6. The thickness of made ground varied across the southern site area although made ground was generally thickest closer to the Lake Lothing quay walls where ground levels are expected to have been raised historically to create the quayside.

#### CONCRETE & UNDERGROUND STRUCTURES

- 4.1.7. Solid concrete up to at least 0.6m thick (maximum thickness recorded in BHC27 located close to the southern side of Lake Lothing) and asphalt / flexible surfacing up to 0.2m thick was recorded at a number of locations both at and below the surface. BHC101 located close to the southern side of Lake Lothing recorded concrete 2.0m thick where it varied from crumbling degraded concrete to solid layers. Three disused six inch pipes were located in the inspection pit for this borehole at a depth of 0.7m.
- 4.1.8. A small diameter clay pipe (possibly a redundant land drain) was encountered at WS101 and was infilled with clay with a hydrocarbon odour.
- 4.1.9. Another redundant pipe was recorded in TPC06 but no details of any infilling were provided.
- 4.1.10.

#### NATURAL STRATA

##### Alluvium Deposits

- 4.1.11. Alluvial deposits have been encountered predominantly to the north of the Lake encountered as both granular and cohesive material.
- 4.1.12. The Granular Alluvium was generally recorded as dark grey, brown and yellow silty, clayey, gravely fine to medium Sand with a strong natural organic odour. The gravels are described as angular to rounded flints.
- 4.1.13. The Cohesive Alluvium was generally recorded as dark grey and black sandy and silty Clay with some shell fragments. The material was described to have a strong natural organic odour.

### Happisburgh Glacigenic Formation

- 4.1.14. The Happisburgh Glacigenic Formation was encountered across the entire site, generally as medium dense to dense Sands, flint Gravels and gravelly Sand. At the top of the strata the material is described as being light and pale orange and brown but becomes darker and grey at depth.
- 4.1.15. Clay banding was encountered within the Sand matrix at varying depth but usually towards the base of the strata. It is generally light to dark grey laminated silty sometimes sandy Clay, with some incidences of flint gravels.

### Crag Group

- 4.1.16. The Crag Group was encountered underlying the Happisburgh Glacigenic Formation across the entire site and generally comprise dense to very dense dark grey medium grained sand with frequent white fine shell fragments, with some fine gravel and occasional clay layers.

### VISUAL AND OLFACTORY EVIDENCE OF CONTAMINATION

- 4.1.17. The presence of volatile organic compounds was assessed by Geosphere Ltd at each exploratory hole using a Photo-Ionisation Detector (PID). The results are presented on the Draft Engineers logs in Annex C.1. Most results were zero and the maximum concentration of 486ppm was recorded in WSC05.

All results above 10 ppm are presented in the Table below.

**Table 5 – Summary of VOC Exceedances > 10ppm**

Exploratory Hole reference	Approximate Depth (m)	Strata Type	VOC Reading(s) (ppm)	
BHC06	0.5	Made ground	122	
BHC13	2.0	Made ground	34	
	3.0	Made ground	19	
BHC17	0.2	Topsoil	12	
	0.4	Made ground	23	
	2.5	Clay	163	
BHC19	2.0	Sand	35	
	3.0	Sand	33	
BHC22	0.3	Made ground	53	
BHC102	0.5	Made ground	98	
	0.3	Concrete	62	
	2.5	Gravel	40	6
	10.5	Sand	33	75
BHC103	4.5	Sand	25	7
	7.0	Sand	13	6
WSC05	2.5	Clay	486	
	3.5	Sand	72	

4.1.18. Other than the man-made detritus recorded within the made ground, visual and olfactory evidence of contamination was recorded by the Geosphere Ltd at the following locations. Further detail is provided on the Draft Engineers logs presented in Annex C.1.

**Table 6 - Summary of Visual and Olfactory Evidence of Contamination**

<b>Exploratory Hole reference</b>	<b>Comment</b>	<b>Strata Type</b>	<b>Impacted Strata Depth (m bgl)</b>
BHC04	Sulphurous and hydrocarbon odours and black staining.	Made ground	0.6m – 1.3m
BHC06	Hydrocarbon odour and black staining	Possible made ground	0.3m – 1.25m
	Sheen on ground water	Possible made ground	1.0m
BHC13	Hydrocarbon odour and black staining	Made ground and possible made ground	1.2m – 6.0m
BHC101	Hydrocarbon odour	Concrete, made ground and natural sand.	0.2m – 4.0m
	Sheen on groundwater	Made ground	2.1m
BHC102	Hydrocarbon odour	Made ground and natural gravel and sand	0.17m - 12.2m
BHC103	Hydrocarbon odour, sheen and staining	Natural sand	1.5m – 3.5m
WSC101	Hydrocarbon odour	Redundant pipe within made ground	0.6m
WSC103	Hydrocarbon odour	Natural sand	2.4m – 4.0m
TPC103	Sulphurous and hydrocarbon odours	Made ground and natural sand	1.2m – 2.2m

4.1.19. From the information presented in the table above, it would appear that the locations exhibiting hydrocarbon odours are located in two distinct areas of the site. One is in the southern part of the site and is located immediately between Riverside Road and Lake Lothing and is the location of the former East Anglia Ice Works, a tyre depot, a cold store and a boat building yard which was located to the east and may have encroached partly onto this area. The other area is in the north of the site, located between the railway line and Denmark Road and is a former coal depot.

## 4.2 MARINE SEDIMENT

The CMS-Geotech vibrocore logs presented in Annex D indicate that the shallow sediments within Lake Lothing comprise silt between 0.4m and 1.6m thickness overlying sand. Clay, silt and gravel layers were also recorded within the sand.

## 5 HYDROLOGICAL & HYDROGEOLOGICAL CONDITIONS

### 5.1 LOCAL HYDROLOGY

#### SURFACE WATER FEATURES

- 5.1.1. Lake Lothing splits the site in two and is recorded as a Primary River. The Water Framework Directive Assessment for Lake Lothing presented as Appendix 17A of the Environmental Statement states the following:- *'This estuarine water body is evaluated as having a current overall status of 'Moderate' due to ecological results, based on the 2016 dataset. It has a status of 'poor' for the angiosperm element of the biological results (the cause of this status is unknown) and a status of 'moderate' for dissolved inorganic nitrogen. It has a status of 'Good' for chemical results. It should be noted that this water body catchment is large and encompasses river sub-catchments with differing characteristics, including estuarine and freshwater broads.'*
- 5.1.2. No other surface water features are present.

#### SURFACE WATER ABSTRACTIONS & DISCHARGES

- 5.1.3. No surface water or potable water abstractions are present within 2km of the site.

### 5.2 HYDROGEOLOGY

#### GEOLOGY AND AQUIFER STATUS

- 5.2.1. The superficial deposits underlying the site comprising sand and clay alluvium, and sand and clay of the Happisburgh Formation are classified as a Secondary (A) Aquifer with permeable layers. These are defined by the Environment Agency as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
- 5.2.2. The underlying sand (with occasional gravel and clay layers) of the Crag Group bedrock is classified as a Principal Aquifer. These are defined by the Environment Agency as layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.

#### GROUNDWATER ABSTRACTIONS

- 5.2.3. The nearest active groundwater abstraction point is approximately 1,300m to the north west.

#### GROUNDWATER ENCOUNTERED DURING INVESTIGATION

- 5.2.4. Ground water was recorded at a number of locations during the ground investigation. The details are summarised in the table below.

**Table 7 - Summary of Ground Water Strikes during the Ground Investigation**

Exploratory Hole Location	Ground Water Level at Strike (mOD)	Strata Type	Observations
BHC03	1.51	Possible Made Ground	-
BHC04	0.048	Sand	-
BHC04	-7.152	Sand	Rose to -2.152 after 60 minutes
BHC06	1.416	Possible Made Ground	Sheen on ground water.
BHC06A	1.282	Made Ground	No change after 20 minutes
BHC06B	1.465	Made Ground	No change after 20 minutes
BHC07	1.62	Sand	-
BHC13	1.88	Made Ground	-
BHC17	0.284	Clay	Rose to 1.114m after 20 minutes

Exploratory Hole Location	Ground Water Level at Strike (mOD)	Strata Type	Observations
BHC101	0.995	Made Ground	Sheen on groundwater.
WSC05	1.213	Sand	-
WSC17	-0.267	Clay	Rose to 0.533m after 10 minutes
WSC19a	0.594	Sand	-
WSC19A(1)	0.298	Sand	-
WSC21	0.725	Sand	-
WSC22	-0.964	Sand	-
WSC23	0.791	Clay	Rose to -0.912m after 15 minutes.
WSC28	-0.902	Possible made ground and sand	-
WSC103	0.375	Sand	-
TPC101	0.912	Made Ground	-
TPC102	1.477	Sand	-
TPC103	1.109	Made Ground	-
TPC02A	1.028	Sand	-
TPC03	1.602	Sand	-
TPC05	1.318 and 0.618	Clay	-
TPC06	0.512	Clay	-
TPC07	1.39	Made Ground	-
TPC08	1.065	Made Ground	-
TPC09	1.12	Clay	-
TPC21	1.31 and 0.31	Clay	-

## MONITORED GROUNDWATER LEVELS

5.2.5. Monitoring of groundwater levels in relation to Ordnance Datum was undertaken on two occasions following the completion of the intrusive ground investigation works. The details are provided in Annex C.2 and are summarised in Tables 8 and 9 below.

**Table 8 - Summary of Ground Water Level Monitoring in the north of the study area**

Stratum	Minimum (mOD)	Maximum (mOD)	Observations
Made Ground	1.232 (BHC02)	1.302 (BHC02)	-
Natural Ground	0.633 (BHC09)	1.4 (BHC07)	-

**Table 9 - Summary of Ground Water Level Monitoring in the south of the study area**

<b>Stratum</b>	<b>Minimum (mOD)</b>	<b>Maximum (mOD)</b>	<b>Observations</b>
Made Ground	0.495 (BHC101)	1.644 (BHC24 PP)	-
Natural Ground	-1.09 (BHC102)	1.754 (BHC24 GG)	-

## HYDRAULIC GRADIENT

- 5.2.6. Whilst not conclusive, the monitoring data appears to indicate the hydraulic gradient is towards Lake Lothing from both the southern study area and the northern study area as would be expected. However, it should be noted that the groundwater monitoring data may be subject to tidal fluctuations which could affect the recorded levels.

## 6 QUANTITATIVE RISK ASSESSMENT

---

### 6.1 INTRODUCTION

- 6.1.1. In the United Kingdom, the presence of contamination within soil or groundwater at a site is generally only of concern if an actual or potentially unacceptable risk to a sensitive receptor exists.
- 6.1.2. The risk assessment process begins with screening chemical concentrations in soil or groundwater against conservative screening values, a process called Generic Quantitative Risk Assessment (GQRA). GQRA's are performed to assess the potential risks to human health and controlled waters and to identify the presence of contaminants of concern (CoC), which may require further more detailed assessment.
- 6.1.3. Annex C.3 presents the chemical test data and Annex F presents the screening spreadsheets.

### 6.2 HUMAN HEALTH RISK ASSESSMENT

- 6.2.1. Following the tiered approach which is described in Model Procedures for the Management of Land Contamination (CLR11) published by DEFRA and the Environment Agency, this Section provides a Generic Quantitative Risk Assessment (GQRA) of those contaminant linkages that were determined to be plausible in the refined CSM.
- 6.2.2. Defra and the EA have published a limited number of Soil Guideline Values (SGVs) for a series of generic land use scenarios which follow the Contaminated Land Exposure Assessment (CLEA) methodology. Where SGVs are not available, WSP has derived a set of Generic Assessment Criteria (GAC) for the CLEA generic land use scenarios using the CLEA Workbook v1.071 Excel modelling tool. The CLEA workbook does not currently have the capacity to derive criteria to assess risks from the inhalation of vapours derived from contaminants dissolved in groundwater. Therefore, a set of groundwater GACs has also been derived using the Johnson & Ettinger (J&E) approach.
- 6.2.3. The chemical test results have been assessed against screening values for both commercial / industrial and public open space land use scenarios. Further details in the methodologies adopted by WSP Ltd are provided in Annex E. These land use scenarios are also defined in the Environment Agency document 'Updated Technical Background to the CLEA Model' Report SC050021/SR3, January 2009.
- 6.2.4. These two scenarios are most appropriate for the proposed highway and landscaping end uses, although both are considered to be reasonably conservative as it is unlikely anyone will be on-site for the duration that either scenario assumes.
- 6.2.5. The soil chemical data has been compared against end use GAC's for a conservative 1% soil organic matter (SOM) content. The average SOM concentration is 1.48% and therefore the nearest appropriate concentration is 1%. Samples that exceed the screen are identified as contaminants of concern (CoC) and are carried forward for further discussion.
- 6.2.6. For an initial assessment, the data has been split into made ground and natural ground averaging areas and then split again into northern site area and southern site area.
- 6.2.7. For some CoC, direct contact will be the dominant pathway for exposure. Due to the unknown nature of soil excavation and reuse at this stage of the design, it is possible that materials from any depth could be excavated and placed at or near the surface in the final design. In order to support with development options, human exposure to all unsaturated soils, irrespective of depth, was assumed possible for the purpose of this assessment. This will maximise the information available to the design team on the suitability of all unsaturated material and can support with their materials management options.
- 6.2.8. Potential risks to human health from soil gases are assessed in Section 6.4.

#### **ASSESSMENT OF RESULTS – PUBLIC OPEN SPACE LAND USE SCENARIO**

- 6.2.9. Hydrocarbon odours and / or sheens were identified at a number of locations during the ground investigation as detailed in Section 4.2.10, Table 5 above. All except two of these locations were targeted for chemical testing and none of the results exceed the hydrocarbon GAC's.

#### **Natural Ground (Southern Site Area)**

- 6.2.10. The following contaminants of concern (CoC) have been identified from the screening of natural ground in the southern site area:-

- Alkaline pH at one location – BHC20 - 10.4 compared to a screening value of 9.5,
- Acid pH at one location – BHC26 - 4.8 compared to a screening value of 5.5.

#### **Natural Ground (Northern Site Area)**

6.2.11. No CoC were identified in natural ground within the northern site area.

#### **Made Ground (Southern Site Area)**

6.2.12. The following contaminants of concern (CoC) have been identified from the screening of made ground in the southern site area:-

- Asbestos was recorded by the chemical testing laboratory in one sample (and potential asbestos is recorded on the Engineers logs in TPC23):-
  - BH102 at 0.3m depth as fibres and clumps of chrysotile.
- Benzo-a-pyrene at two locations – WSC23 (26mg/kg) and BHC31 (12mg/kg) exceeded the GAC of 11mg/kg.
- Alkaline pH at five locations – TPC21 (9.6), BHC102 (11.2), BHC101 (10.3) and WSC16 (10.5) exceeded the GAC of 9.5,
- Lead at one location – BHC31 – 1500mg/kg compared to a screening value of 808mg/kg.

#### **Made Ground (Northern Site Area)**

6.2.13. The following contaminants of concern (COC) have been identified from the screening of made ground in the southern site area:-

- Asbestos was recorded by the chemical testing laboratory in one sample:-
  - TPC02 at 0.3m depth as cement bound chrysotile,
- Benzo-a-pyrene at one location – IPC01 (12mg/kg compared to a GAC of 11mg/kg,
- Alkaline pH at six locations – TPC101 (9.9), TPC04 (9.8), BHC02 (11), TPC02 (11.8), BHC08 (10.10) and BHC10 (10) values exceeded the GAC of 9.5.

### **ASSESSMENT OF RESULTS - COMMERCIAL / INDUSTRIAL LAND USE SCENARIO**

6.2.14. Hydrocarbon odours and / or sheens were identified at a number of locations during the ground investigation as detailed in Section 4.1.17, Table 6 above. All except two of these locations were targeted for chemical testing and none of the results exceed the hydrocarbon GAC's.

#### **Natural Ground (Southern Site Area)**

6.2.15. The following contaminants of concern (CoC) have been identified from the screening of natural ground in the southern site area:-

- Alkaline pH at one location – BHC20 - 10.4 compared to a screening value of 9.5,
- Acid pH at one location – BHC26 - 4.8 compared to a screening value of 5.5.

#### **Natural Ground (Northern Site Area)**

6.2.16. No CoC were identified in natural ground within the northern site area.

#### **Made Ground (Southern Site Area)**

6.2.17. The following contaminants of concern (CoC) have been identified from the screening of made ground in the southern site area:-

- Asbestos was recorded by the chemical testing laboratory in one sample (and potential asbestos is recorded on the Engineers logs in TPC23):-
  - BH102 at 0.3m depth as fibres and clumps of chrysotile.
- Alkaline pH at five locations – TPC21 (9.6), BHC102 (11.2), BHC101 (10.3) and WSC16 (10.5) exceeded the GAC of 9.5,
- Lead at one location – BHC31 – 1,500mg/kg compared to a screening value of 1,390mg/kg.

#### **Made Ground (Northern Site Area)**

6.2.18. The following contaminants of concern (COC) have been identified from the screening of made ground in the southern site area:-



- Asbestos was recorded by the chemical testing laboratory in one sample:-
  - TPC02 at 0.3m depth as cement bound chrysotile,
- Alkaline pH at six locations – TPC101 (9.9), TPC04 (9.8), BHC02 (11), TPC02 (11.8), BHC08 (10.10) and BHC10 (10) values exceeded the GAC of 9.5.

## 6.3 CONTROLLED WATERS RISK ASSESSMENT

6.3.1. The generic controlled waters risk assessment was conducted in accordance with the principles of the Environment Agency publication 'Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination' 2006 (EA 2006) and the 'prevent and limit' approach of the Water Framework Directive (2000/60.EC). Generic controlled waters risk assessments compare directly measured concentrations with standard assessment criteria. In this case the following assessments were undertaken:

- Level 1 - evaluates the concentrations of chemicals within the pore water in the unsaturated zone of source area soil, in this case soil leachate analysis/using theoretical calculations.
- Level 2 - evaluates the concentrations of chemicals within the saturated zone immediately underlying a source area i.e. taking dilution and attenuation into account, in this case groundwater analysis.

6.3.2. Appropriate Water Quality Standards (WQS) are selected based on both a hierarchy of relevance to England and Wales and the receptor. In this case, the controlled water receptors identified in the CSM are:-

- Lake Lothing surface watercourse;
- The underlying Secondary A Aquifer within the superficial deposits;
- The underlying Principal Aquifer within the bedrock.

6.3.3. The following hierarchies of WQS were therefore considered to be appropriate:

### Aquifers

- UK Drinking Water Quality Standards (DWS) from The Water Supply (Water Quality) Regulations 2000 (amended 2004)
- World Health Organisation Guidelines for Drinking Water Quality, Fourth Edition, Volume 1, (2011)
- World Health Organisation Petroleum Products in Drinking Water (2008)

### Surface Waters

- Environmental Quality Standards (EQS) from The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015

6.3.4. Screening spreadsheets are presented in Annex F.

## RISKS TO AQUIFER

### Soil Leachability Testing

6.3.5. Screening of soil leachate test results from the ground investigation identified the following minor WQS exceedances:-

- Alkaline pH – two locations - BHC02 (pH11) and BH102 (pH10.4) compared to a WQS of 10,
- Arsenic – one location – BHC05 (25µg/l) compared to a WQS of 10µg/l,
- Chromium – one location – BHC08 (52µg/l) compared to a WQS of 50µg/l,
- Nickel – one location – BHC08 (65µg/l) compared to a WQS of 20µg/l,
- Lead – three locations, BHC08 (19µg/l), IPC01 (25µg/l) and BH102 (14µg/l) compared to a WQS of 10µg/l,
- Aliphatic hydrocarbons C12-C16 – BHC19 (310µg/l) compared to a WQS of 300µg/l,
- Aromatic hydrocarbons C12-C16 – BHC13 (110µg/l) compared to a WQS of 90µg/l.

6.3.6. It should be noted that the limits of detection for benzo(a)pyrene and total PAH are in excess of the screening values.

### Groundwater Sampling 4/5th January 2018

6.3.7. Screening of two water samples (BHC02 and BHC102) taken by Geosphere on 4th and 5th January 2018 did not identify any WQS exceedances.

6.3.8. It should be noted that the limits of detection for total PAH and benzo(a)pyrene are in excess of the screening values.

### **Groundwater Sampling 1st Monitoring Visit**

- 6.3.9. Screening of 8 groundwater samples identified the following minor exceedances of the WQS:-
- Alkaline pH – five locations (BHC09, BHC24(dual well), BHC01 and BHC14) recorded values between pH11.7 and pH13.2 compared to a WQS of pH10,
  - Sulphate – one location – BHC01 (350µg/l) compared to a WQS of 250µg/l,
  - Arsenic – one location – BHC27 (17µg/l) compared to a WQS of 10µg/l,
  - Chromium – one location – BHC01 (160µg/l) compared to a WQS of 50µg/l,
  - Nickel – two locations – BHC24 (77µg/l) and BHC01 (43µg/l) compared to a WQS of 20µg/l.
- 6.3.10. It should be noted that the limits of detection for total PAH and benzo(a)pyrene are in excess of the screening values.

### **Groundwater Sampling 2nd Monitoring Visit**

Screening of 9 groundwater sampling identified the following exceedances of the WQS:-

- Alkaline pH - three locations (BHC24(dual well) and BHC01 recorded values between pH11.4 and pH12.6 compared to a WQS of pH10,
- Nickel - two locations BHC24 (41µg/l) and BHC01 (30µg/l) compared to a WQS of 20µg/l.

It should be noted that the limits of detection for total PAH and benzo(a)pyrene are in excess of the screening values.

## **RISKS TO LAKE LOTHING SURFACE WATER**

### **Soil Leachability Testing**

- 6.3.11. Screening of soil leachate test results from the ground investigation identified the following WQS exceedances:-
- Cadmium – one location. 0.21µg/l compared to a WQS of 0.2µg/l,
  - Copper – twelve locations. 4.2 µg/l to 32 µg/l compared to a WQS of 3.76 µg/l,
  - Mercury – two locations. 0.52 µg/l to 0.53µg/l compared to a WQS of 0.07µg/l,
  - Nickel – One location. 65µg/l compared to a WQS of 8.6µg/l,
  - Lead – 16 locations. 1.3µg/l to 25µg/l compared to a WQS of 1.3µg/l,
  - Zinc – four locations. 7.8µg/l to 190µg/l compared to a WQS of 6.8µg/l,
  - Anthracene – two locations. 0.15µg/l and 2.8µg/l compared to a WQS of 0.1µg/l,
  - Fluoranthene – two locations. 2.2µg/l and 7.6µg/l compared to a WQS of 0.0063µg/l,
- 6.3.12. It should be noted that the limits of detection for cyanide, mercury, hexavalent chromium, fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene and benzo(ghi)perylene are in excess of the screening values.

### **Surface Water Sampling**

- 6.3.13. The surface water sampling undertaken by CMS-Geotech at four locations within Lake Lothing on 19th April 2018 (shown on Drawing 1069948-WSP-EGN-LL-C19-SK-LE-000X presented in Annex D) identified the following contaminants in excess of the relevant WQS:-
- Zinc – exceedances in all four samples with concentrations varying from 8.88µg/l to 26.8µg/l compared to a WQS of 6.8µg/l.
- 6.3.14. Lake Lothing is an operating port and it is probable that these results can be attributed to the presence of sacrificial zinc anodes on the hulls of ships using the port.
- 6.3.15. It should be noted that the limits of detection for both cadmium and chromium are in excess of the screening values.

### **Groundwater Sampling 4/5th January 2018**

- 6.3.16. Screening of two water samples (BHC02 and BHC102) taken by Geosphere on 4th and 5th January 2018 identified minor exceedances of the WQS for;-
- Copper - one location – BHC102 (8.6µg/l) compared to a WQS of 3.76µg/l. ,
  - Nickel - one location – BHC102 (9.9µg/l) compared to a WQS of 8.6µg/l. ,
  - Zinc two locations – BHC102 (24µg/l) and BHC02 (12µg/l) compared to a WQS of 6.8µg/l. .

- 6.3.17. It should be noted that the limits of detection for cyanide, mercury, hexavalent chromium, fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(ghi)perylene, 2,4-dichlorophenol, 1,2,4-Trichlorobenzene, hexachlorobenzene and total phenols are in excess of the screening values.

#### **Groundwater Sampling 1st Monitoring Visit**

- 6.3.18. Screening of 8 groundwater samples identified exceedances of the WQS for:-

- Copper – four locations, 4.8µg/l to 61µg/l compared to a WQS of 3.76µg/l,
- Nickel – five locations, 11µg/l to 77µg/l compared to a WQS of 8.6µg/l,
- Lead – two locations, 1.8µg/l to 5.2µg/l compared to a WQS of 1.3µg/l,
- Zinc – four locations, 7µg/l to 17µg/l compared to a WQS of 6.8µg/l,
- Hexavalent chromium – one location BHC01 (160µg/l) compared to a WQS of 0.6µg/l,

- 6.3.19. It should be noted that the limits of detection for cyanide, mercury, hexavalent chromium, fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(ghi)perylene and total phenols are in excess of the screening values.

#### **Groundwater Sampling 2nd Monitoring Visit**

Screening of 9 groundwater samples identified exceedances of the WQS for:-

- Copper – two locations, BHC24 (19µg/l) and BHC01 (36µg/l) compared to a WQS of 3.76µg/l,
- Mercury – one location, BHC24 (0.68µg/l) compared to a WQS of 0.07µg/l,
- Nickel – four locations, 8.7µg/l to 41µg/l compared to a WQS of 8.6µg/l,
- Lead – one locations, (BHC01) 3.8µg/l compared to a WQS of 1.3µg/l,
- Zinc – one location, (BHC02) 11µg/l compared to a WQS of 6.8µg/l,
- Hexavalent chromium – one location BHC01 (40µg/l) compared to a WQS of 0.6µg/l,

- 6.3.20. It should be noted that the limits of detection for cyanide, mercury, hexavalent chromium, fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(ghi)perylene and total phenols are in excess of the screening values.

### **DISCUSSION**

- 6.3.21. There is some olfactory/ visual evidence of the presence of hydrocarbons in the vicinity of the exploratory holes CPTC13, BHC13, BHC101, BHC102, BHC103 and WSC103 near the southern bank of Lake Lothing (and in a number of other isolated locations). In addition, there are some associated VOC readings (identified using a PID meter during ground investigation) and minor theoretical hydrocarbon exceedances in soil leachate screening values.
- 6.3.22. Sampling of groundwater from monitoring well installations (adopting best practice of purging) within adjacent boreholes (BHC102, BHC14 and BHC27) do not show any exceedances of groundwater screening values for hydrocarbons. It is therefore concluded that although there is some evidence of hydrocarbon presence in a number of locations on site, particularly near the southern bank of Lake Lothing, the analysis of soil, soil leachate and groundwater samples identify that the concentrations are not significant. It is possible that minor spillages have occurred in the past or that any more significant spillages have dispersed with time due to the generally permeable nature of the sub-strata on site. It is recommended that further groundwater monitoring is undertaken from borehole installations to confirm that no significant exceedances of groundwater screening values are present.

## **6.4 GROUND GAS ASSESSMENT RESULTS**

- 6.4.1. To date, two of six rounds of ground gas monitoring have been undertaken by Geosphere Ltd on the following dates:-
- 9th to 14th May 2018
  - 23rd to 24th May 2018
- 6.4.2. A control building will be constructed as part of the bridge and therefore this gas assessment will inform the design of that building.

6.4.3. Atmospheric pressure during the first monitoring visit varied between 1006mb and 1016mb which was a rising trend and during the second visit varied between 1002mb and 1025mb which is a falling trend. The reading for BHC01 of 1002mb is believed to be a typo as all except one location has atmospheric pressure recorded between 1021 and 1025. The results of the gas monitoring are presented in Annex C.2.

6.4.4. Table 9 presents Gas Screening Values (GSV) which have been calculated in accordance with C665 for each gas monitoring well.

**Table 10 - Summary of Ground Gas Monitoring results**

<b>Exploratory Hole</b>	<b>Max Flow Rate (lhr-1)</b>	<b>Max Methane (% v/v)</b>	<b>Max Carbon Dioxide (% v/v)</b>	<b>Methane GSV</b>	<b>Carbon Dioxide GSV</b>
BHC01	0.9	<0.1	0.5	0.0009	0.0045
BHC02	<0.1	<0.1	3.6	0.0001	0.0036
BHC07	<i>7.4 (recorded at start)</i>	0.1	0.2	<i>0.0074</i>	<i>0.0148</i>
	Maximum steady flow of 0.1			0.0001	0.0002
BHC08	<i>0.9 (recorded at start)</i>	<0.1	<0.1	<i>0.0009</i>	<i>0.0009</i>
	Maximum steady flow of <0.1			0.0001	0.0001
BHC09	-0.3	0.1	<0.1	0.0003	0.0003
BHC14	-0.3	<0.1	<0.1	0.0003	0.0003
BHC24(P)	<i>50.4 (recorded at the start)</i>	0.1	<0.1	<i>0.0504</i>	<i>0.0504</i>
	Maximum steady flow of 0.3			0.0003	0.0003
BHC24(GG)	<i>-0.3 (recorded at the start)</i>	<0.1	0.6	<i>0.0003</i>	<i>0.0018</i>
	Maximum steady flow of <0.1			0.0001	0.0006
BHC27	<i>-1.6 (recorded at the start)</i>	<0.1	<0.1	<i>0.0016</i>	<i>0.0016</i>
	Maximum steady flow of -0.9			0.0009	0.0009
BHC102	<0.1	<0.1	0.2	0.0001	0.0002

6.4.5. Based on the maximum steady flows, the GSV ranged between 0.0001 and 0.0045. All monitoring wells are therefore classified as Characteristic Situation 1 indicating very low risk from ground gases.

It should be noted that where the maximum flow was recorded at the start of the monitoring (italics in the table above), the GSV ranged from 0.0003 to 0.0504, which does not change the Characteristic Situation.

## 6.5 MARINE SEDIMENT SAMPLING

6.5.1. The chemical test results from the sediment grab samples and the vibrocore sediment samples have been assessed against the CEFAS (Centre for Environment, Fisheries and Aquaculture Science) criteria for offshore disposal. In addition, the vibrocore samples were also subjected to waste acceptance criteria (WAC) testing to assess potential onshore disposal routes.

### CEFAS ASSESSMENT

6.5.2. The tables in Annex F presents a comparison of the sample results against the current CEFAS Action Levels, (detailed on the table) and was undertaken to establish the overall concentrations of contamination present.

6.5.3. The action levels stated are not 'pass/fail' criteria but, in general, contaminant levels below action level 1 are considered unlikely to influence a decision by the MMO on dredge disposal, pursuant to the Deemed Marine Licence (DML). Dredged material with contaminant levels above action level 2 is generally considered unsuitable for sea disposal. Dredged material with contaminant levels between action levels 1 and 2 may require further testing pursuant to the operation of the DML.

- 6.5.4. Of the 12 grab samples, 11 showed levels of trace metal contaminants for at least one determinant above the CEFAS Action Level 1 values, the most common contaminant being nickel. No samples had levels above the CEFAS Action Level 2 for any determinant.
- 6.5.5. Of the 32 vibrocore samples, 10 showed levels of trace metal contaminants for nickel, cadmium and arsenic above the CEFAS Action Level 1 values, the most common contaminant being nickel. No samples had levels above the CEFAS Action Level 2 for any determinant.
- 6.5.6. It is therefore considered that the sediments are likely to be suitable for offshore disposal subject to approval by the MMO pursuant to the DML. The sediments are also considered unlikely to have an unacceptable impact from a contamination perspective if they are mobilised during and / or after construction.

### **WASTE ACCEPTANCE CRITERIA ASSESSMENT**

- 6.5.7. Waste Acceptance Criteria (WAC) testing of the vibrocore samples indicates that most samples pass the inert waste criteria but a few fail the inert, non-hazardous and hazardous criteria.
- 6.5.8. If onshore disposal of excavated sediment is considered at the construction stage, further assessment will be required once the sediments have been excavated and additional pre-treatment is likely to be required to reduce the moisture content prior to acceptance for disposal at a suitably licenced landfill.

## **6.6 PILING RISK ASSESSMENT**

- 6.6.1. A Piling Works Risk Assessment, reference 1069948-WSP-EGT-LL-RP-LE-0002 has been undertaken by WSP in accordance with the following Environmental Agency guidance and is presented as Appendix 12C to the Environmental Statement;-
- Piling in layered ground: risks to groundwater and archaeology. Environment Agency (October 2006), Science Report SC020074/SR;
  - Piling into contaminated sites. Environment Agency National Groundwater and Contaminated Land Centres (February 2002); and
  - Piling and penetrative ground improvement methods on land affected by contamination: guidance on pollution prevention. Environment Agency (May 2001).

## 7 WASTE ASSESSMENT

---

- 7.1.1. A waste classification hazardous properties assessment has been carried out in accordance with the WM3 Technical Guidance, to determine if the site soils contain any hazardous properties and would therefore require disposal as hazardous waste.
- 7.1.2. The soil chemical test results have been assessed and identified hazardous properties in 7 samples;-
- TPC02 at 0.3m,
  - BHC04 at 0.9m,
  - WSC23 at 0.5m,
  - BHC27 at 0.6m,
  - BHC101 at 2.1m,
  - BHC101 at 3.0m,
  - BHC31 at 0.4m.
- 7.1.3. All of the above are in made ground except BHC101 which is in natural ground and exhibits hazardous properties due to elevated petroleum hydrocarbons.
- 7.1.4. This material cannot be reused in the scheme and will require offsite disposal as hazardous waste under the European Waste Catalogue (EWC) as '17 05 03' Soil and stones containing dangerous substances.
- 7.1.5. No other material was classified as containing hazardous properties. Therefore, the remaining material would be classified under the EWC as '17 05 04 Soil and stones other than those mentioned in 17 05 03'.
- 7.1.6. Waste acceptance criteria (WAC) analysis has been carried out on a number of samples in order to assess the acceptability to landfill should offsite disposal be required. Two samples recording hazardous properties were also subjected to WAC testing and the results indicate these materials are suitable for hazardous waste disposal. The other WAC test results indicate that most samples meet the criteria for inert waste disposal but 4 samples fail the inert criteria and will require disposal as non-hazardous waste;-
- BHC05 at 0.6m – fails the inert criteria for chloride, sulphate and total dissolved solids,
  - WSC14 at 1.7m – fails the inert criteria for PAH and antimony,
  - BHC32 at 0.6m – fails the inert criteria for total organic carbon,
  - BHC08 at 2.6m – fails the inert criteria for chromium and selenium.
- 7.1.7. The construction Contractor will need to make their own assessment of the waste classifications.

## 8 REFINED CONCEPTUAL SITE MODEL

### 8.1 INTRODUCTION

- 8.1.1. This Section provides a refinement of the preliminary CSM from the Environmental Desk Study Report (presented as Appendix 12A to the Environmental Statement). From the information identified during the ground investigation and the risk assessments detailed in Section 6 above, plausible source-pathway-receptor contaminant linkages have been refined in line with industry good practice (principally CLR11).
- 8.1.2. The refined CSM provides an updated understanding of the site based on the findings of the site investigation and analytical results and draws on the ground, hydrogeological and contamination models which are presented in Sections 4, 5 and 6. It has been used to inform the quantitative risk assessments undertaken in Section 6 in the context of a future land use comprising a new highway layout, bridge and associated landscaping and hard standing.

### 8.2 PLAUSIBLE CONTAMINANT LINKAGES

- 8.2.1. Table 10 provides a revised evaluation of the potential contaminant linkages that were considered to be plausible for the future use of the Site. It uses the current site investigation findings to refine the Phase 1 assessment.

**Table 11 - Summary of Plausible Contaminant Linkages**

Potential Contaminants	Potential Pathways	Potential Receptors	Comments
Free asbestos fibres in made ground soil	Inhalation of asbestos fibres.	Future site users Future maintenance workers	Extensive hard standing will restrict exposure following construction but exposure during construction and during maintenance works cannot be discounted. The presence of asbestos elsewhere within the made ground cannot be discounted therefore if made ground materials are placed in landscaping areas, a capping layer will also need to be considered to minimise the risk to site users and adjacent site users from inhalation of fibres.
Contaminants in soil	Dermal contact, ingestions and inhalation of contaminated made ground, soil particles and fugitive dust.	Future site users Future maintenance workers	Extensive hard standing will restrict exposure at most locations except where landscaping is proposed. Detected potential contaminants limited to benzo-a-pyrene, pH and lead.
Leachable contaminants and contaminants in groundwater	Vertical leaching from impacted soil and lateral migration of impacted groundwater derived from on-site sources.	Superficial geology Secondary (A) aquifer and bedrock Principal aquifer. Lake Lothing surface water	Shallow groundwater samples appear to have been impacted slightly by metals but this does not appear to have been replicated in the deeper groundwater samples although some minor impact has been identified. There is a theoretical risk to surface waters from leachable contaminants in soil including minor hydrocarbon exceedances. Extensive hard standing will limit rainfall percolation and leachate potential and the identified exceedances of the WQS criteria are generally not significantly elevated. Whilst a contaminant linkage is considered likely to exist, an unacceptable risk to controlled waters is considered unlikely

## 9 CONCLUSIONS AND RECOMMENDATIONS

---

### 9.1 GROUND CONDITIONS

- 9.1.1. The ground investigation confirmed the anticipated geology of made ground overlying alluvial deposits (sand and clay), sand with clay banding of the Happisburgh Formation and sand (with clay layers) of the Crag Group.
- 9.1.2. Made ground was recorded at all exploratory hole locations and varied in thickness from 0.75m to at least 3.7m, although possible made ground was recorded to in excess of 6.0m depth at one location. The made ground was generally sand and gravel and heterogeneous in nature.
- 9.1.3. The thickness of made ground varied across the site. In the southern site area, with no particular areas recording thicker made ground than others.
- 9.1.4. Solid concrete at the surface up to at least 0.6m thick was recorded at a few locations, although a 2m thick layer of crumbling degraded concrete was also encountered at one location. This is not across a large area and is not considered to be a significant constraint to construction.
- 9.1.5. Two small diameter redundant pipes were recorded, one infilled with clay which recorded a hydrocarbon odour.
- 9.1.6. Other than the man-made detritus recorded within the made ground, visual and olfactory evidence of contamination was recorded at a number of locations as hydrocarbon odour, sulphurous odour or hydrocarbon sheen.
- 9.1.7. Fragments of potential asbestos containing materials were recorded at one location close to the Council offices.
- 9.1.8. The ground investigation confirmed the presence of shallow groundwater which is likely to be in continuity with the Lake Lothing surface water body.

### 9.2 ENVIRONMENTAL / CONTAMINATION ASSESSMENT

9.2.1. The following contamination issues have been identified:-

- In addition to potential asbestos recorded on the Draft Engineers logs at one location, it was also recorded in two made ground soil samples. The potential for more asbestos containing materials to be present within made ground materials cannot be discounted and the construction Contractor should take necessary precautions to protect their staff, site users and adjacent site users as set out in the interim CoCP.
- Natural ground within the southern site area recorded exceedances of the human health GAC values for both public open space and commercial / industrial end use screening values for alkaline pH at one location and acid pH at two locations.
- Natural ground within the northern site area did not record any exceedances of the human health GAC values for either a public open space or commercial / industrial end use.
- Made ground within the southern site area recorded exceedances of the human health GAC values for both public open space for benzo-a-pyrene (two locations) and for both a public open space and commercial / industrial end use for alkaline pH (five locations) and lead (one location).
- Made ground within the northern site area recorded exceedances of the human health GAC values for a public open space end use for benzo-a-pyrene (one location) and for both a public open space and commercial / industrial end use for alkaline pH (six locations) and lead (one location).
- The human health exceedances recorded are not considered likely to constrain a major development scheme of this type and can be managed through placement of an inert subsoil and topsoil cap within any landscaping areas. The identified exceedances are of a low magnitude and it is considered that they can be managed by a competent Contractor using good construction techniques and standard hygiene practices during the construction works.
- Surface water samples from Lake Lothing have identified minor exceedances of the EQS screening value for zinc.
- Groundwater samples have identified generally low exceedances of both the EQS and DWS screening values for a number of determinants.



- Risks to controlled waters are therefore considered to be relatively low although there is some evidence of impact to groundwater. Whilst a contaminant linkage is considered likely to exist, an unacceptable risk to controlled waters is considered unlikely.
- From the monitoring data available, ground gas has not been recorded at concentrations that require specific gas protection measures over and above standard construction techniques.
- Marine sediment sampling undertaken within Lake Lothing did not identify any sediments with contaminant concentrations above the CEFAS Level 2 action level. It is therefore considered that marine sediments within Lake Lothing are unlikely to pose an unacceptable risk to the marine environment if disturbed and transported to other areas of the Lake during construction. It is also considered that excavated sediments are suitable for offshore disposal in accordance with a suitable licence.

## 9.3 OUTLINE REMEDIAL MEASURES

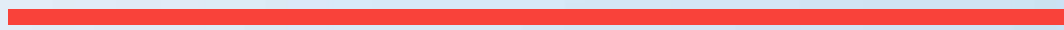
- 9.3.1. Potential risks to future site users from asbestos within made ground has been identified and the possibility of made ground at the site containing further asbestos cannot be ruled out. Depending upon the final design and working methods, further sampling and assessment at these locations may need to be undertaken by the construction Contractor and if necessary, consideration should be given to excavating and removing this material from site.
- 9.3.2. Other potential human health risks were identified for a commercial / industrial end use, but these are mitigated to acceptable levels where construction of the road will break the pathway. However, in areas where landscaping is proposed, if made ground is reused, it is considered that placement of an inert subsoil and topsoil capping underlain by a geotextile (to delineate the made ground capping interface and to minimise mixing of the soils) will be sufficient to minimise the risks to site users and adjacent site users. Discussion with the Regulators at detailed design stage will be required to agree the exact scope of any capping.
- 9.3.3. There is some olfactory/ visual evidence of the presence of hydrocarbons near the southern bank of Lake Lothing (and in a number of other isolated locations). However, sampling of groundwater from monitoring well installations within adjacent boreholes does not show any exceedances of groundwater screening values for hydrocarbons. It is therefore concluded that although there is some evidence of hydrocarbon presence in a number of locations on site, particularly near the southern bank of Lake Lothing, the analysis of soil, soil leachate and groundwater samples suggest that the concentrations are not significant. It is therefore recommended that further groundwater monitoring is undertaken from borehole installations to confirm that no significant exceedances of groundwater screening values are present.

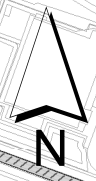
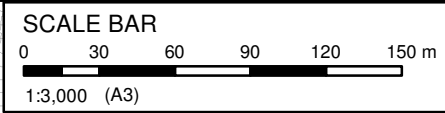
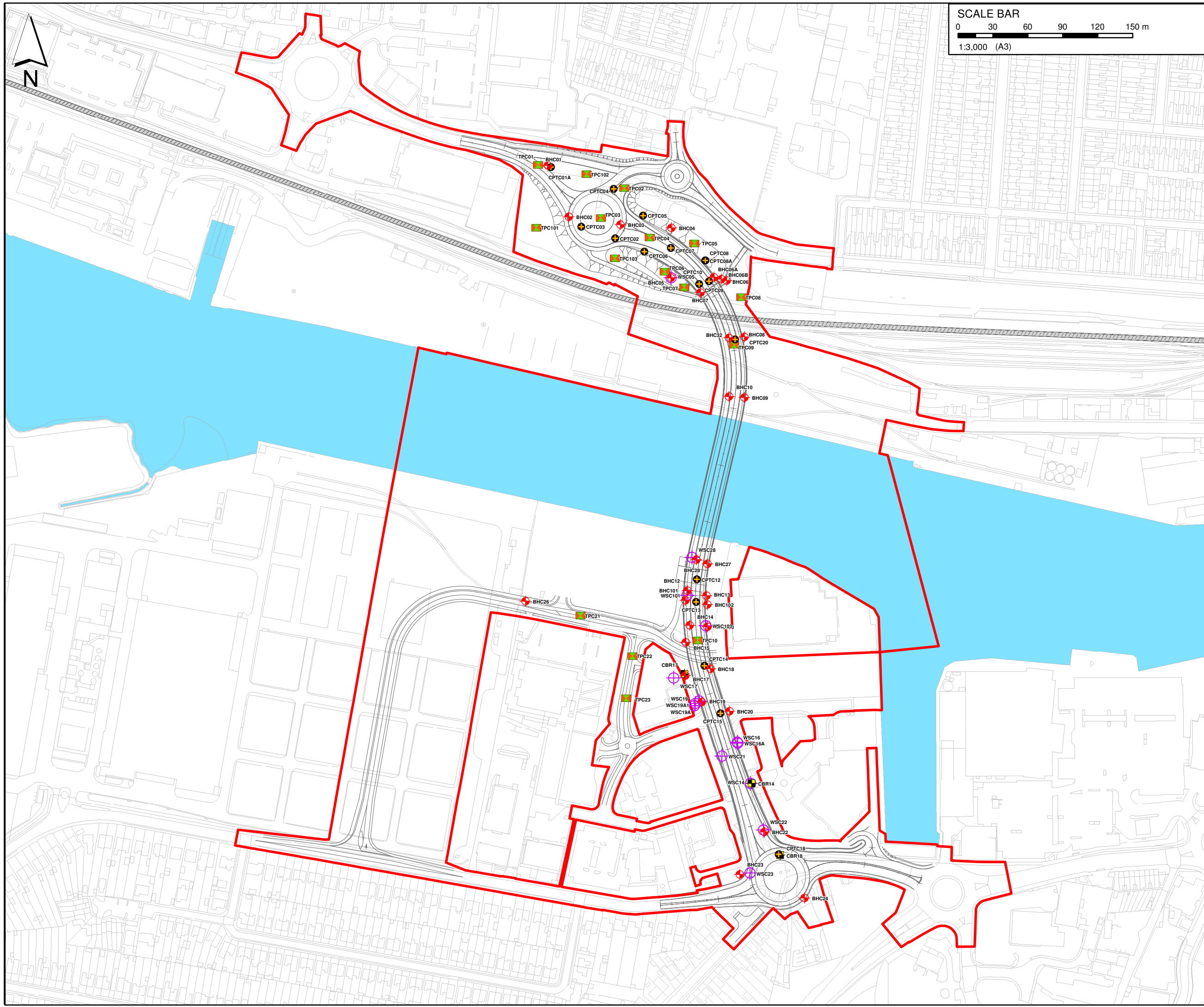
## 9.4 CONSTRUCTION CONSIDERATIONS

- 9.4.1. Protection of construction workers, site users and adjacent site users from airborne dust generated from made ground during construction will be required and measures are set out in the interim CoCP and will form part of the full CoCP.
- 9.4.2. The construction Contractor will need to keep a watching brief for unforeseen contamination including hydrocarbons and asbestos. Hydrocarbon odours and sheen were identified during the ground investigation, but chemical testing did not record any elevated concentrations.

# Annex A

DRAWINGS





- KEY**
- The Scheme (illustrative)
  - Existing Rail Track
  - Order Limits
  - GI Sampling Locations**
  - Borehole
  - Cone Penetration Test
  - California Bearing Ratio
  - Trial Pit
  - Window Sample

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO.  
 © Crown copyright and database rights 2017. All rights reserved.  
 Ordnance Survey licence number 100023395  
 Contains OS data © Crown copyright and database rights 2017.

P00	IW	HR	MD	18/06/2018
-----	----	----	----	------------

FOR DCO SUBMISSION

REVISION	DRAWN	CHECKED	APPROVED	DATE
DESCRIPTION				



PROJECT TITLE  
 Lake Lothing  
**THIRD CROSSING**

DRAWING TITLE  
 Sampling Locations  
 Regulation 5(2)(a)  
 Figure 12.2

DRAWING STATUS  
 FOR DCO SUBMISSION

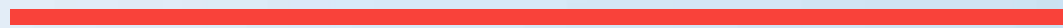
DRAWN	CHECKED	APPROVED	AUTHORISED	SUITABILITY
IW	HR	HR	JB	S4
SCALE @ A3 SIZE		DATE	REVISION	
1:3,000		18/06/2018	P00	

DRAWING NUMBER

Project	Originator	Volume	
1069948-WSP-EGN-LL-SK-LE-0020			
Location	Type	Role	Number

# Annex B

SCOPE OF WORKS



## LAND BASED FIELD WORKS

---

### GENERAL WORKS

The ground investigation was undertaken between 24th July 2017 and 25th April 2018 by Geosphere Ltd who acted as Principal Contractor and were contracted to The Applicant. Chemtest Ltd were sub-contracted by Geosphere to undertake the chemical testing.

The ground investigation was undertaken in general accordance with techniques outlined in BS5930:2015 and BS1377:2016, as appropriate, at the positions shown on Drawing 1069948-WSP-ENG-LL-SK-LE-0020 – Sampling Locations Regulations 5(2)(a) Figure 12.2. The exploratory hole logs are presented in Annex C.1.

The investigation was monitored part time by an Engineer from WSP Ltd.

### GAS AND GROUNDWATER MONITORING WELL INSTALLATION

Gas and groundwater monitoring wells were installed in selected boreholes summarised below and were constructed from 50mm perforated plastic pipe with a pea gravel surround and fitted with air tight gas valves. As a minimum requirement, each monitoring well comprised plain pipe from ground level to 1m with a bentonite pellet surround. Exact details of each installation are shown on the Engineers logs in Annex C.1.

**Table 12 - Summary of Monitoring Wells**

Exploratory Hole Location	Response Zone	Installed Strata
BHC01	1m - 3m	Potential Made Ground** / Sand
BHC02	1m – 10.5m	Possible made ground** / Silt / Sand
BHC07	6m – 12m	Sand / Clay / Sand
BHC08	7m – 12m	Sand
BHC09	8m – 12m	Sand
BHC14	1m – 2.5m	Made Ground
BHC24	5m – 11.5m	Sand
	1m – 2.5m	Made ground / Sand
BHC27	4m – 12m	Gravel and Sand
BHC102	5m – 11m	Sand

\*\* Strata description changed from natural to potential / possible made ground by the Contractor after the monitoring well instruction was given.

### HEADSPACE SCREENING

Disturbed soil samples were taken by Geosphere Ltd at regular intervals during the advancement of investigation locations for headspace screening. Samples were stored in headspace bags and screened for volatile organic compounds following a period for equilibration using a Photo Ionisation Detector. The results of the PID testing are presented on the exploratory hole records (Annex C.1).

### GROUNDWATER AND GAS MONITORING

All boreholes were monitored by Geosphere Ltd for ground gas concentrations on two occasions to-date. Concentrations of methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), oxygen (O<sub>2</sub>) and trace gases (including carbon monoxide, hydrogen sulphide) and volatile organic compounds were recorded together with gas flow rates. Atmospheric pressures during the monitoring were also noted to enable a quantitative gas risk assessment to be carried out if necessary in accordance with current best practice.

The results of the gas and groundwater monitoring are presented in Annex C.2.



## **GROUNDWATER SAMPLING**

Geosphere Ltd have undertaken groundwater sampling on two occasions to-date (9<sup>th</sup> to 14<sup>th</sup> May and 23<sup>rd</sup> and 24<sup>th</sup> May) at fortnightly intervals after completion of the site works. Prior to each round of groundwater sampling, three well volumes were purged.

Groundwater samples were retained by Geosphere Ltd in containers provided to Geosphere Ltd by Chemtest Ltd and transported to the testing laboratory in accordance with Chemtest Ltd sample handling protocols.

In addition to the above two groundwater sampling visits undertaken after completion of the site works, two locations (BHC02 and BHC102) were also monitored on one occasion at the start of January 2018 during the site works.

## **MARINE SAMPLING WORKS**

---

### **GENERAL WORKS**

The marine sampling works were undertaken between 9th April 2018 and 23rd April 2018 by CMS-Geotech Ltd who were contracted to WSP Ltd. The chemical testing was scheduled by WSP Ltd and undertaken by ALS Ltd were sub-contracted by WSP Ltd.

Samples were stored in appropriate bottles and transported in cooler boxes to the testing laboratory under a chain of custody protocol within 24hours of being taken.

The factual records comprising sampling locations and test results are presented in Annex D.

### **SEDIMENT GRAB SAMPLING**

Sediment surface grab samples were taken from 48 locations within the lake bed predominantly for the purposes of informing the potential for offshore disposal and sediment transport post construction.

### **VIBROCORE SAMPLING**

Vibrocore sampling from 12 locations at nominal metre intervals to a nominal 4m depth was undertaken within the bed of Lake Lothing predominantly for the purposes of informing the potential for offshore disposal and sediment transport post construction.

### **SURFACE WATER SAMPLING**

Surface water samples were recovered from the 4 locations within Lake Lothing.

## TESTING

### CHEMICAL TESTING – SOILS & LEACHATE

Selected soil samples were scheduled for chemical analysis by WSP Ltd which was undertaken Chemtest Ltd under contract to Geosphere Ltd. The results of the contamination testing are presented in Annex C. The following testing was scheduled:

**Table 13 - Summary of Chemical Testing for Soils**

Strata	Soil Sample Laboratory Analysis (no.)											% Samples in Upper 1m
	Metals	General	TPHCWG	VOC	SVOC	PAH	PCB EC7	PCB WHO 12	WAC	Asbestos	SOM	
Made Ground	57	57	57	57	57	57	29	27	20	56	7	70
Natural Ground (Clay)	9	9	9	9	9	9	2	5	1	4	5	11.1
Natural Ground (Silt)	1	1	1	1	1	1	1	0	1	0	1	0
Natural Ground (Sand)	24	23-24	31	31	27	31	7	4	1	0	21	3.2
Natural Ground (Gravel)	0	0	2	2	0	2	0	0	0	0	0	0
Key												
Metals	Arsenic, boron, cadmium, chromium (total and hexavalent), lead, mercury, copper, nickel, selenium and zinc											
General	pH, water soluble sulphate, total sulphate, ammonia as N, phenol, free cyanide and total cyanide											
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene											
VOC	Volatile Organic Compounds											
SVOC	Semi Volatile Organic Compounds											
PAH	Speciated Poly Aromatic Hydrocarbons											
PCB EC7	PCBs EC7 Congeners											
PCB WHO12	PCBs WHO12 Congeners											
WAC	Total Waste Acceptance Criteria Suite											
Asbestos	Screen only											
SOM	Soil Organic Matter											



**Table 14 - Summary of Chemical Testing for Leachate**

Strata	Soil Leachate Laboratory Analysis (no.)					% Samples in Upper 1m
	Metals	General	TPHCWG	SVOC	PAH	
Made Ground	26	26	26	4	26	65.4
Natural Ground (Clay)	0	0	0	0	0	0
Natural Ground (Silt)	0	0	0	0	0	0
Natural Ground (Sand)	1	1-2	3	0	3	0
Natural Ground (Gravel)	0	0	0	0	0	0
<b>Key</b>						
Metals	Arsenic, boron, cadmium, chromium (total and hexavalent), lead, mercury, copper, nickel, selenium and zinc					
General	pH, water soluble sulphate, ammonia as N, phenol, free cyanide and total cyanide					
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene					
SVOC	Semi Volatile Organic Compounds					
PAH	Speciated Polyaromatic Hydrocarbons					

## CHEMICAL TESTING - WATER

Water Samples were extracted from the monitoring wells on site on two occasions by Geosphere Ltd and submitted for chemical analysis at Chemtest Ltd. The results of the contamination testing are presented in Annex C. The following testing was carried out:

**Table 15 – Summary of Chemical Testing for Water (Groundwater and Surface Water)**

Water Body	Laboratory Analysis (no.)					
	Metals	General Suite	TPHCWG	VOC	SVOC	PAH
Groundwater	19	19	19	19	19	19
<b>Key</b>						
Metals	Arsenic, cadmium, chromium (hexavalent and total), lead, mercury, copper, nickel, selenium and zinc),					



General Suite	pH, Sulphate water soluble, Ammonia as N, Cyanide (total and free) and phenol
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene
VOC	Volatile Organic Compounds
SVOC	Semi Volatile Organic Compounds
PAH	Speciated Polyaromatic Hydrocarbons (PAH)

## CHEMICAL TESTING – LAKE BED SEDIMENT GRAB SAMPLES

Lake bed sediment surface grab samples were taken by CMS-Geotech Ltd from 12 locations within the Lake and were submitted for chemical analysis at ALS Laboratories in Hawarden. The results of the contamination testing are presented in Annex D.2. The following testing was scheduled by WSP Ltd:

Strata	Laboratory Analysis (no.)						
	Metals	TPHCWG	Pesticides	PAH	PSD	PCB	Organotins
Lake Lothing Sediments	12	12	12	12	12	12	12
Key							
Metals	Arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc						
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene						
Pesticides	Organo-chloride and organo-phosphate pesticides and triazine herbicides						
PAH	Speciated Polyaromatic Hydrocarbons						
PSD	Particle size distribution						
PCB	Polychlorinated biphenyls EC7 and WHO12 Congeners.						
Organotins	Organotin compounds						

## CHEMICAL TESTING – LAKE BED SEDIMENT VIBROCORE SAMPLES

Lake bed sediment samples at nominal 1m intervals to 4m depth were taken from 12 Vibrocore locations within the Lake Lothing bed sediments by CMS-Geotech Ltd and were submitted for chemical analysis at ALS Laboratories in Hawarden. The results of the contamination testing are presented in Annex D.2. The following testing was scheduled by WSP Ltd:

Strata	Laboratory Analysis (no.)												
	Metals	General Suite	Asbestos	Pesticides	PBDE	PAH	PSD	PCB	Organotins	TPHCWG	SVOC	VOC	WAC
Lake Lothing Sediment Vibrocore Samples	34	34	34	34	34	34	34	34	34	34	34	34	34
Key													
Metals	Arsenic, boron, cadmium, chromium (total and hexavalent), copper, lead, mercury, nickel, selenium and zinc												
General Suite	Soil organic matter, pH, sulphate - water soluble and total, cyanide (total and free) and phenol, solid content.												
Asbestos	Asbestos screen												
Pesticides	Organo-chloride and organo-phosphate pesticides and triazine herbicides												
PBDE	Polybrominated Diphenyl Ethers												
PAH	Speciated Polyaromatic Hydrocarbons												
PSD	Particle size distribution												
PCB	Polychlorinated biphenyls EC7 and WHO12 Congeners.												
Organotins	Organotin compounds												
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene												
SVOC	Semi volatile organic carbon												
VOC	Volatile Organic Carbon												
WAC	Total Waste Acceptance Criteria suite												

## CHEMICAL TESTING – LAKE LOTHING SURFACE WATER SAMPLES

Four water samples were taken from Lake Lothing by CMS-Geotech and submitted for chemical analysis at ALS Laboratories in Hawarden. The results of the contamination testing are presented in Annex D.2. The following testing was carried out:

**Table 16 – Summary of Chemical Testing for Surface Water**

Water Body	Laboratory Analysis (no.)						
	Metals	General Suite	TPHCWG	VOC	SVOC	PAH	
River (Lake Lothing)	4	4	4	4	4	4	
Key							



Metals	Arsenic, cadmium, chromium (hexavalent and total), lead, mercury, copper, nickel, selenium and zinc),
General Suite	pH, Sulphate water soluble, Ammonia as N, Cyanide (total and free) and phenol
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene
VOC	Volatile Organic Compounds
SVOC	Semi Volatile Organic Compounds
PAH	Speciated Polyaromatic Hydrocarbons (PAH)

# Annex C

LAND BASED GROUND

---

INVESTIGATION FACTUAL  
INFORMATION





# Annex C.1

ENGINEERS LOGS



GEL AGS BH BETA 2543, GI - LAKE LOTHING. 05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK).GPJ\_GINT STD AGS 3.1.GDT 25-4-18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC01</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.1 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 19-Apr-18 - 20-Apr-18		PROJECT NO. 2543,GI Lake Lothing	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	
						0	10	20	30	40												
				TOPSOIL (Dark brown slightly gravelly silty fine to coarse sand with rootlets. Gravel of angular to subrounded fine to coarse flint)			0.00					0										
				MADE GROUND (Dark orange brown and brown mottled gravelly fine to coarse sand. Gravel of subangular to subrounded fine to coarse brick and flint)			0.20					0.20	ES	B1								VOC = 0ppm
				POTENTIAL MADE GROUND (Orange brown gravelly fine to coarse sand with occasional brown mottling. Gravel of subangular to subrounded fine to coarse flint)			0.50					0.50		B2								VOC = 0ppm
							0.70					0.70	ES	J2								VOC = 0ppm
							1.00					1.00	1	B3								VOC = 0ppm
							1.10					1.10	ES	J3								VOC = 0ppm
				Orange brown gravelly medium and coarse SAND. Gravel of subangular to rounded fine and medium flint			1.50					1.50	S	B5	2 2 3 4	18						VOC = 0ppm
				2.00 Becoming yellow brown with depth			1.70					1.70	ES	J4	5 6							VOC = 0ppm
							2.00					2.00	2	B6								VOC = 0ppm
							2.50					2.50	ES	B7	2 2 2 3 3 2	10						VOC = 0ppm
							3.00					3.00	3	B8								VOC = 0ppm
				Yellow brown slightly gravelly silty fine SAND. Gravel of subangular to subrounded fine flint			3.50					3.50	ES	B9	3 3 3 4 3 3	13						VOC = 0ppm
							4.50					4.50	C	B10	2 2	8						VOC = 0ppm
							4.60					4.60	ES	J7	1 2 3 2							VOC = 0ppm

*WATER  Standing water level Water strikes	PIEZOMETER Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	 Geosphere Environmental	PROJECT No. 2543,GI Lake Lothing SHEET 1 OF 3 HOLE No. BHC01
---	---	---	---	---	-----------------------------	--

DEPTH All depths, level and thicknesses in metres

Lothing



GEL AGS BH BETA 2543 GI - LAKE LOTHING 05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK).GPJ\_GINT STD AGS 3 1\_GDT 25-4-18

<b>CLIENT: Suffolk County Council</b>	<b>PROJECT: Lake Lothing</b>	<b>GROUND LEVEL m</b>	<b>HOLE No. BHC01</b>
LOGGED BY: LF FIELDWORK BY: TEMPLATE REF: GEL AGS BH BETA	CHECKED BY: SG DATE:	EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.1 m	Coordinates: , DATES 19-Apr-18 - 20-Apr-18
			SHEET 2 OF 3 PROJECT NO. 2543,GI Lake Lothing

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
						Reduced Level	Depth	SPT 'N' Value	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>			
				Yellow brown silty/clayey fine SAND			5.50	0 10 20 30 40	5.50	C	B11	11	9									VOC = 0ppm
									5.60	ES	J8	22 32										
									6													
									6.50	S	B13	33	12									VOC = 0ppm
									6.60	ES	J9	33 33										
									7													
				Yellow brown very clayey fine and medium SAND			7.50		7.50	S	B15	12	16									VOC = 0ppm
									7.60	ES	J10	34 45										
									8													
									8.50	S	B17	23	22									VOC = 0ppm
									8.60	ES	J11	46 66										
									9		B18											
									9.00													
									9.50	S	B20	710	45									VOC = 0ppm
									9.60	ES	J12	1112 1210										
									10													
				Dark grey slightly clayey fine SAND with orange brown sand pockets			10.50		10.50	S	B22	56	23									VOC = 0ppm
									10.60	ES	J13	76 55										
									11													

<p>*WATER  Standing water level</p> <p> Water strikes</p>	<p>PIEZOMETER </p>	<p>Upper seal </p> <p>Response zone </p> <p>Lower seal </p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT N</p> <p>SPT blows for each 75mm increment (35) Undisturbed sample blow count</p> <p>N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>		<p>PROJECT No.</p> <p>2543,GI Lake</p> <p>Lothin</p>	<p>SHEET</p> <p>2 OF 3</p>	<p>HOLE No.</p> <p>BHC01</p>
---	--------------------	---	--	--	---	--	--	----------------------------	------------------------------

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543,GI - LAKE LOTHING. 05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK).GPJ GINT STD AGS 3 1.GDT 25-4-18

<b>CLIENT:</b> Suffolk County Council	<b>PROJECT:</b> Lake Lothing	<b>GROUND LEVEL m</b>	<b>HOLE No.</b> BHC01
LOGGED BY: LF FIELDWORK BY:	CHECKED BY: SG DATE:	EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.1 m	COORDINATES: ,
TEMPLATE REF: GEL AGS BH BETA			DATES 19-Apr-18 - 20-Apr-18
			PROJECT NO. 2543,GI Lake Lothing

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m³	Cu kN/m²	
								0	10	20	30	40													
				Dark grey slightly clayey fine SAND with orange brown sand pockets ( <i>continued</i> )								11.00	11	B23											
				Grey medium and coarse SAND with occasional dark grey mottling				11.50				11.50	72	S	B25	10 12 12 15 16 7	72*								
				Grey medium and coarse SAND with weak to moderate natural organic odour				12.50				12.50	75	S	B27	18 7 19 20 11	75*								
												13.50		S	B29	6 6 4 4 3 3	14								
				Grey CLAY with weak to moderate natural organic odour				14.20				14.30			D30										
								14.80				14.50			B32	(35)									VOC = 0ppm
				Dark grey silty medium SAND with moderate natural organic odour				14.80				14.60			ES	UT31 J14									
								15.10																	Borehole completed at 15.1m bgl. Borehole backfilled with betonite grout to 3.0m bgl

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S S Standard penetration test Blows, C Cone penetration test SPT N, K Permeability test

DEPTH All depths, level and thicknesses in metres

	PROJECT No.	2543,GI Lake
	SHEET	3 OF 3
HOLE No.	BHC01	PROJECT No.



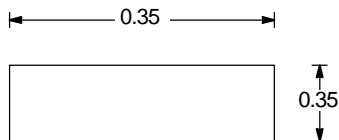
Geosphere Environmental Ltd  
 Brightwell Barns, Ipswich Road,  
 Brightwell, Suffolk, IP10 0BJ  
 Telephone: 01603 298076

### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>BHC02(HP)</b>
Job No <b>2543,GI</b>	Date <b>10-08-17</b> <b>10-08-17</b>	Ground Level (m) <b>2.57</b>	Grid Reference ( )	
Fieldwork By <b>JG</b>		Logged By <b>JG</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	CONCRETE				
0.20-0.40	MADE GROUND (orange brown very gravelly coarse Sand. Gravel of angular to subrounded fine and medium brick and flint)		0.25	J1ES	VOC=1ppm (peak)
0.40-0.50	MADE GROUND (grey red very gravelly Sand. Gravel of fine and medium subrounded to angular red brick and concrete)		0.40	J2ES	VOC=1ppm (peak)
0.50-0.70	MADE GROUND (black brown slightly gravelly organic Sand. Gravel of fine subrounded to subangular flint)		0.60	J3ES	VOC=1ppm (peak)
0.70-1.30	Brown grey slightly gravelly medium and coarse SAND. Gravel of fine subangular to subrounded fine flints.		0.90	J4ES	VOC=0ppm (peak)
			1.30	J5ES	VOC=0ppm (peak)

GEL\_AGS\_TP\_BETA\_2543,GI - LAKE LOTHING.GPJ GINT STD\_AGS 3\_1.GDT 11/8/17



Shoring/Support:  
 Stability:

All dimensions in metres Scale 1:12.5	Method Inspection pit	Plant Used HAND DUG	Checked By <b>SG</b>
--	-----------------------	---------------------	-------------------------

GEL AGS BH BETA 2543 GI - LAKE LOTHING (CONFLICT COPY 3 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) GPJ GINT STD AGS 3 1.GDT 24-8-17

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC02</b>	
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 14-Aug-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 12.0 m		GPS CO-ORDINATES 653774.81, 293000.11	
				DATES 11-Aug-17 - 18-Aug-17		SHEET 1 OF 3	
						PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>		
								0	10	20	30	40													
				CONCRETE			0.00						0												
				MADE GROUND (orange brown very gravelly fine to coarse sand. Gravel of angular to subrounded fine and medium brick and flint)			0.20						0.25	ES	J1										VOC=1ppm (peak)
				MADE GROUND (Grey and dark orange brown very gravelly fine to coarse sand. Gravel of fine and medium subrounded to angular red brick and concrete)			0.40						0.40	ES	J2										VOC=1ppm (peak)
				MADE GROUND (Black and brown slightly gravelly sand with moderate natural organic odour. Gravel of fine subrounded to subangular flint)			0.50						0.60	ES	J3										VOC=1ppm (peak)
				POSSIBLE MADE GROUND (Brown grey slightly gravelly medium and coarse sand. Gravel of fine subangular to subrounded fine flint)			0.70						0.90	ES	J4										VOC=0ppm (peak)
				Possible MADE GROUND (Brown slightly gravelly silty fine sand. Occasional gravel of subrounded to rounded flint)			1.00						1.00	B	B1	3 3		13							VOC=0ppm (peak)
				Pale brown slightly sandy SILT with occasional pockets of clay.			1.20						1.20	D	D1	4 2									VOC=0ppm (peak)
							1.30						1.30	ES	J5	3 4									VOC=0ppm (peak)
							1.80						2.00	B	B2	2 1		6							VOC=0ppm (peak)
													2.00	D	D2	1 1									VOC=0ppm (peak)
													2.00	ES	J6	2 2									VOC=0ppm (peak)
													3.00	B	B3	2 1		7							VOC=0ppm (peak)
													3.00	D	D3	1 1									VOC=0ppm (peak)
													3.00	ES	J7	3 2									VOC=0ppm (peak)
													4.00	B	B4	2 1		7							VOC=0ppm (peak)
													4.00-5.00	ES	J8	3 2									>90% recovery from P1 sample within soft soils, VOC=0ppm (peak)
													5.00	P	P1										VOC=0ppm (peak)
													5.00	B	B4	3 3		24							VOC=0ppm (peak)
													5.00	D	D4	6 6									VOC=0ppm (peak)
													5.00	ES	J9	5 7									VOC=0ppm (peak)

*WATER  Standing water level Water strikes	PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	 Geosphere Environmental	PROJECT No. 2543,GI SHEET 1 OF 3 HOLE No. BHC02
---	------------	---	---	---	--	-----------------------------	--

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>			<b>HOLE No. BHC02</b>			
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 14-Aug-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 12.0 m			GPS CO-ORDINATES 653774.81, 293000.11			SHEET 2 OF 3
							DATES 11-Aug-17 - 18-Aug-17			PROJECT NO. 2543,G1

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>				
				Pale brown slightly sandy SILT with occasional pockets of clay. (continued)	X			0	10	20	30	40	6.00	6	B ES P	B5 J10 P2										No recovery within P2, bulk taken, VOC=0ppm (peak)
					X								7.00	7	B D ES	B6 D5 J11	11 13 46	14								VOC=0ppm (peak)
				8.00 - 8.40 Grey clay band, recovered in lumps	X								8.00	8	B ES	B7 J12	12 12 31	7								VOC=0ppm (peak)
					X								9.00	9	B ES UT100	B8 J13 U1										UT100 failed, bulk taken, VOC=0ppm (peak)
				9.80 - 10.10 Slightly grey brown dry clay with small selenite gravel	X								10.00	10	B ES	B9 J14	32 44 51	14								VOC=0ppm (peak)
				Grey slightly silty fine and medium SAND.	.																					

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test, C Cone penetration test, K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count, SPT N N = SPT N value (blows after seating), N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

**Geosphere Environmental**

PROJECT No. 2543,G1  
SHEET 2 OF 3  
HOLE No. BHC02

GEL AGS BH BETA 2543,G1 - LAKE LOTHING (CONFLICT COPY 3 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK)\GPJ\_GINT STD AGS 3 1.GDT 24-8-17

GEL AGS BH BETA 2543.GI - LAKE LOTHING (CONFLICT COPY 3 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK)\GPJ\_GINT.STD AGS 3\_1.GDT\_24-8-17

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC02</b>	
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 14-Aug-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 12.0 m		GPS CO-ORDINATES 653774.81, 293000.11	
				DATES 11-Aug-17 - 18-Aug-17		SHEET 3 OF 3 PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>
							0	10	20	30	40												
				Grey slightly silty fine and medium SAND. (continued)	X							11.00	11	B10									SPT sunk under own weight
												12.00	12										Material blown up borehole to 7.5m bgl
													13										
													14										
													15										
													16										

\*WATER Standing water level PIEZOMETER Upper seal  
 Water strikes Response zone  
 Lower seal

**SAMPLE AND TEST KEY**

D	Small disturbed sample	S	Standard penetration test
B	Bulk disturbed sample	C	Cone penetration test
U	Undisturbed sample	K	Permeability test
P	Piston sample		
J	Disturbed jar sample		
ES	Environmental soil sample		
W	Water Sample		

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

**PROJECT No.**  
2543,GI

**SHEET**  
3 OF 3

**HOLE No.**  
BHC02

GEL AGS BH BETA 2543.GI - LAKE LOTHING (CONFLICT COPY 3 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK)\GPJ\_GINT.STD AGS 3\_1.GDT\_24-8-17

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC03										
LOGGED BY: FIELDWORK BY: DRILLT		CHECKED BY: SG DATE: 24-Aug-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 25.0 m				GPS CO-ORDINATES 653814.18, 292898.68				SHEET 1 OF 5										
TEMPLATE REF: GEL AGS BH BETA								DATES 14-Aug-17 - 24-Aug-17				PROJECT NO. 2543,GI										
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>
				CONCRETE		0.00					0											
				MADE GROUND (Brown grey red gravelly sand. Gravel of angular to subrounded brick and flint).		0.20					0.30	ES	J1									VOC=0ppm(peak)
				MADE GROUND (Dark brown slightly gravelly sand. Gravel of subrounded to subangular fine and medium and fine brick)		0.50					0.60	ES	J2									VOC=0ppm(peak)
				Possible MADE GROUND (Pale brown slightly clayey sand. Occasional gravel of rounded to subangular flint)		0.70					0.90	ES	J3									VOC=0ppm(peak)
		1.00				1.00					1.00	B	B1									Slow to moderate inflow of water at 1m
						1.20					1.20	B	B2	25		29						VOC=0ppm(peak)
						1.30					1.30	D	D1	48								VOC=0ppm(peak)
												S	J4	710								
												ES										
				Pale brown silty SAND with occasional gravel of subangular to subrounded flint		2.00					2.00	2	B	B3	11		12					VOC=0ppm(peak)
												D	D2	33								
												ES	J5	24								
												S										
												3	B	B4	11		7					VOC=0ppm(peak)
												D	D3	21								
												ES	J6	13								
												S										
				Pale orange brown slightly clayey fine SAND with occasional grey mottling		4.00					4.00	4	B	B5	10		4					VOC=0ppm(peak)
												D	D4	11								
												ES	J7	11								
												S										
												5	B	B6	11		8					VOC=0ppm(peak)
												D	D5	21								
												ES	J8	32								
												S										

\*WATER Standing water level  
 Water strikes

PIEZOMETER  
 Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
SPT N N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve



PROJECT No. 2543,GI  
SHEET 1 OF 5  
HOLE No. BHC03

DEPTH All depths, level and thicknesses in metres

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC03**  
 LOGGED BY:      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      **GPS CO-ORDINATES 653814.18, 292898.68**      **SHEET 2 OF 5**  
 FIELDWORK BY: DRILLT      DATE: 24-Aug-17      **Uncased to 25.0 m**      **DATES 14-Aug-17 - 24-Aug-17**      **PROJECT NO. 2543,G1**  
 TEMPLATE REF: GEL AGS BH BETA

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes				
						Reduced Level	Depth	SPT 'N' Value	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>							
				Pale orange brown slightly clayey fine SAND with occasional grey mottling ( <i>continued</i> )				0	10	20	30	40														
				Pale brown silty SAND with occasional pockets of clay			6.00						6.00	6	B ES UT100	B7 J9 UO	(40)								VOC=0ppm(peak)  UT100 failed at 6.0m depth, 0% recovery	
													7.00	7	B D ES S	B8 D6 J10	2 1 2 3 5 6	16								VOC=0ppm(peak)
													8.00	8	B D ES S	B9 D7 J11	2 3 5 4 5 5	19								VOC=0ppm(peak)
				9.00 - 9.40 Band of grey clay									9.00	9	B ES S	B10 J12	2 2 3 5 7 7	22								VOC=0ppm(peak)
				Pale brown silty fine SAND			9.40																		VOC=0ppm(peak) Blowing sands at 10.0m depth, borehole backfilled to 4.8m depth 80% recovery of UT100 at 10m depth	
													10.00	10	B ES UT100	B11 J13 U1	(72)									

GEL AGS BH BETA 2543,G1 - LAKE LOTHING (CONFLICT COPY 3 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK)\GPJ\_GINT.STD AGS 3\_1.GDT 24-8-17

\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal    **SAMPLE AND TEST KEY**  
 D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample    C Cone penetration test    (35) Undisturbed sample blow count  
 U Undisturbed sample    K Permeability test    SPT N N = SPT N value (blows after seating)  
 P Piston sample      
 J Disturbed jar sample      
 ES Environmental soil sample      
 W Water Sample      
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental  
**PROJECT No. 2543,G1**  
**SHEET 2 OF 5**  
**HOLE No. BHC03**



GEL AGS BH BETA 2543.GI - LAKE LOTHING (CONFLICT COPY 3 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK)\GPJ\_GINT.STD AGS 3\_1.GDT\_24-8-17

<b>CLIENT: Suffolk County Council</b>				<b>PROJECT: Lake Lothing</b>				<b>GROUND LEVEL m</b>				<b>HOLE No. BHC03</b>												
LOGGED BY: FIELDWORK BY: DRILLT		CHECKED BY: SG DATE: 24-Aug-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 25.0 m				GPS CO-ORDINATES 653814.18, 292898.68				SHEET 3 OF 5												
TEMPLATE REF: GEL AGS BH BETA								DATES 14-Aug-17 - 24-Aug-17				PROJECT NO. 2543,GI												
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
				Pale brown silty fine SAND (continued)	X		0 10 20 30 40					11.00	B S	B12	2 2 3 2 2 3	10								
					X							12.00	B S	B13	1 2 2 3 3 4	12								
					X							13.00	B	B14										
					X							14.00	B	B15										
				Grey brown slightly silty fine and medium SAND	X							15.00	B	B16										
					X								S		10 11 12	5								
					X							16.00	B	B17										

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test, C Cone penetration test, K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count, SPT N N = SPT N value (blows after seating), N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No. 2543,GI  
SHEET 3 OF 5  
HOLE No. BHC03

GEL AGS BH BETA 2543 GI - LAKE LOTHING (CONFLICT COPY 3 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK)\GPJ\_GINT.STD AGS 3\_1.GDT\_24-8-17

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC03</b>	
LOGGED BY: FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 24-Aug-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 25.0 m		GPS CO-ORDINATES 653814.18, 292898.68	
DATES 14-Aug-17 - 24-Aug-17						SHEET 4 OF 5	
						PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>	
				Grey brown slightly silty fine and medium SAND <i>(continued)</i>	x			0 10 20 30 40															
										17.00	17	B S	B18	4 11 11 8 6 5	30								
										18.00- 18.00- 18.45	18	B UT100	B19 U2	(82)									UT100 failed at 18.0m depth, 0% recovery
										19.00	19	B S	B20	3 7 7 10 13 17	47								Blowing sands at 19.0m depth, borehole backfilled to 6.0m depth
										20.00- 20.45	20	UT100	U3	(152)									100% recovery of UT100 at 20m depth
				Dark grey fine and medium SAND with bands of clay	.					21.00	21	B S	B21	11 13 20 10	54*								

<p>*WATER</p> <p>▽ Standing water level</p> <p>▽ Water strikes</p>	<p>PIEZOMETER</p> <p>▨ Upper seal</p> <p>▩ Response zone</p> <p>▧ Lower seal</p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count</p> <p>SPT N N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	<p>Geosphere Environmental</p>	<p>PROJECT No. 2543,GI</p> <p>SHEET 4 OF 5</p> <p>HOLE No. BHC03</p>
--	--	--	--	--	--------------------------------	--

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543.GI - LAKE LOTHING (CONFLICT COPY 3 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK)\GPJ\_GINT.STD AGS 3\_1.GDT\_24-8-17

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC03</b>	
LOGGED BY: FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 24-Aug-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 25.0 m		GPS CO-ORDINATES 653814.18, 292898.68	
				DATES 14-Aug-17 - 24-Aug-17		SHEET 5 OF 5	
						PROJECT NO. 2543,G1	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
				Dark grey fine and medium SAND with bands of clay <i>(continued)</i>	B S		0 10 20 30 40 55	22.00	22	B S	B22	14 17 24	55*											
					B S			23.00	79	23	B S	B23	17 11 19 14 18	79*										
					B S			24.00 24.00- 24.45		24	B S	B24 UT100 U4	(200)											100% recovery of UT100 at 24m depth
					B S			25.00		25	B S	B25	2 4 5 8 9 11	33										Borehole completed at 25.0m depth
										26														
										27														

<p>*WATER  Standing water level</p> <p> Water strikes</p>	<p>PIEZOMETER </p>	<p>Upper seal </p> <p>Response zone </p> <p>Lower seal </p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count</p> <p>SPT N N = SPT N value (blows after seating)</p> <p>&lt;425 N*120 = Total blows/penetration including seating</p> <p>Sample % passing 425 micron sieve</p>		<p>PROJECT No. 2543,G1</p> <p>SHEET 5 OF 5</p> <p>HOLE No. BHC03</p>
---	--------------------	---	--	--	--	--	--

DEPTH All depths, level and thicknesses in metres

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m					HOLE No. BHC04										
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				GRID REFERENCE: TM 53859 92985					SHEET 1 OF 8										
FIELDWORK BY: DRILLT		DATE:		300mm cased from 0.0 to 4.0m				DATES 04-Sep-17 -					PROJECT NO. 2543,GI										
TEMPLATE REF: GEL AGS BH BETA				250mm cased from 4.0 to 16.0m																			
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				CONCRETE (Pale grey, no rebar)		0.00					0												
				MADE GROUND (Dark orange brown silty cobbly sand and gravel. Gravel of angular to subrounded fine to coarse concrete, brick and flint)		0.20					0.30	ES	B1 J1									VOC = <0.1ppm (peak)	
				MADE GROUND (Black and dark brown silty cobbly sand and gravel with weak to moderate natural organic odour. Gravel of angular to subrounded fine to coarse flint, brick, concrete and occasional wood)		0.50					0.60	ES	B2 J2									VOC = <0.1ppm (peak) Rest groundwater level at 0.6m bgl	
				MADE GROUND (Black silty fine grained silt with strong sulphurous and hydrocarbon odour)		1.00					0.90	ES	J3									VOC = 4.0ppm (peak)	
				MADE GROUND (Dark yellow brown fine and medium sand with black staining and strong hydrocarbon odour)		1.10					1.10	ES	B3	12	11	5						VOC = 5.0ppm (peak)	
				Dark yellow brown very clayey fine and medium SAND with pockets of dark yellow brown gravelly clay		1.20					1.20	ES	J4	12									
											2.00	ES	B4 J5	00	00	0						VOC = <0.1ppm (peak)	
04-09	2.00	2.40																				Inflow of water at 2.4m	
				Black organic rich CLAY with very occasional black shells		3.00					3.00	ES	B5 J6	00	00	0						VOC = <0.1ppm (peak) Sample B5 unrepresentative due to recovery of saturated clayey sands	
				Black organic rich clayey fine and medium SAND with black clay pockets		3.70																Sample D2 representative of black organic clay	
				Orange brown and brown mottled very clayey fine and medium SAND with clay bands		5.00					4.00	ES	B6 J7	00	00	0						VOC = <0.1ppm (peak)	
				Orange brown and brown mottled sandy CLAY		5.20																	
											5.00	ES	B7 J8	22	24	12						VOC = <0.1ppm (peak)	

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS 3\_1.GDT 5-10-17

\*WATER  $\nabla$  Standing water level  $\nabla$  Water strikes

PIEZOMETER

Upper seal  
Response zone  
Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
SPT N N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve



PROJECT No.  
2543,GI  
SHEET  
1 OF 8  
HOLE No.  
BHC04

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC04**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      **GRID REFERENCE: TM 53859 92985**      **SHEET 2 OF 8**  
 FIELDWORK BY: DRILLT      DATE:      300mm cased from 0.0 to 4.0m      **DATES 04-Sep-17 -**  
 TEMPLATE REF: GEL AGS BH BETA      250mm cased from 4.0 to 16.0m      **PROJECT NO. 2543,G1**

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation		Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>		
				Orange brown and brown mottled sandy CLAY (continued)																		
				Yellow brown and orange brown mottled silty fine and medium SAND with dark orange brown horizons and pockets of dark grey sandy clay					6.00	6	ES B8 UT100 J9 U1	(41)									VOC = <0.1ppm (peak)	
									7.00	7	ES B9 S J10	2 3 6 10 13 15	44									VOC = <0.1ppm (peak)
									8.00	8	ES B10 S J11	5 8 2 3 5 6	16									VOC = <0.1ppm (peak)
									9.00	9	ES B11 S J12	2 2 2 3 6 9	20									VOC = <0.1ppm (peak)
									10.00	10	ES B12 S J13	1 2 3 7 9 6	25									VOC = <0.1ppm (peak)
																						Inflow of water at 9.6m

\*WATER Standing water level      PIEZOMETER      Upper seal      Response zone      Lower seal      **SAMPLE AND TEST KEY**

**D** Small disturbed sample      **S** Standard penetration test      **Blows** SPT blows for each 75mm increment (35) Undisturbed sample blow count  
**B** Bulk disturbed sample      **C** Cone penetration test      **SPT N** N = SPT N value (blows after seating)  
**U** Undisturbed sample      **K** Permeability test      **N\*120** = Total blows/penetration including seating  
**P** Piston sample      **<425** Sample % passing 425 micron sieve  
**J** Disturbed jar sample  
**ES** Environmental soil sample  
**W** Water Sample

**DEPTH** All depths, level and thicknesses in metres

Geosphere Environmental

**PROJECT No. 2543,G1**  
**SHEET 2 OF 8**  
**HOLE No. BHC04**

GEL AGS BH BETA 2543,G1 - LAKE LOTHING.GPJ\_GINT STD AGS 3\_1.GDT 5-10-17



**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC04**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      **GRID REFERENCE: TM 53859 92985**  
 FIELDWORK BY: DRILLT      DATE:      300mm cased from 0.0 to 4.0m      **DATES 04-Sep-17 -**  
 TEMPLATE REF: GEL AGS BH BETA      250mm cased from 4.0 to 16.0m      **PROJECT NO. 2543,G1**

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>
								0	10	20	30	40											
				Dark grey medium and coarse SAND with black and white shells (continued)																			
													17.00	17	B19								
													18.00	18	B20								
													19.00	19	B21								
													20.00	20	B22								
													21.00	21	B23								
													22.00	22									

GEL AGS BH BETA 2543,G1 - LAKE LOTHING.GPJ\_GINT STD AGS 3 1.GDT 5-10-17


\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample    C Cone penetration test    (35) Undisturbed sample blow count  
 U Undisturbed sample    K Permeability test    SPT N N = SPT N value (blows after seating)  
 P Piston sample    N\*120 = Total blows/penetration including seating  
 J Disturbed jar sample    <425 Sample % passing 425 micron sieve  
 ES Environmental soil sample    W Water Sample

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental

**PROJECT No. 2543,G1**  
**SHEET 4 OF 8**  
**HOLE No. BHC04**

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC04**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      **GRID REFERENCE: TM 53859 92985**      **SHEET 5 OF 8**  
 FIELDWORK BY: DRILLT      DATE:      300mm cased from 0.0 to 4.0m      **DATES 04-Sep-17 -**  
 TEMPLATE REF: GEL AGS BH BETA      250mm cased from 4.0 to 16.0m      **PROJECT NO. 2543,GI**

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
								0	10	20	30	40													
				Dark grey medium and coarse SAND with black and white shells (continued)	•••••								22.00	22	B24										
													23.00	23	B25										
													24.00	24	B26										
													25.50-26.00		B27										
				Dark grey silty medium and coarse SAND with fine flint gravel, shell fragments and occasional shells and sandy clay bands	○		26.00						26												
													27.00	27	B28										

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS 3 1.GDT 5-10-17

\*WATER Standing water level      PIEZOMETER  
 Water strikes

Upper seal      Response zone      Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample      S Standard penetration test      Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample      C Cone penetration test      (35) Undisturbed sample blow count  
 U Undisturbed sample      K Permeability test      SPT N N = SPT N value (blows after seating)  
 P Piston sample      N\*120 = Total blows/penetration including seating  
 J Disturbed jar sample      <425 Sample % passing 425 micron sieve  
 ES Environmental soil sample      W Water Sample

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental

PROJECT No.  
2543,GI  
SHEET  
5 OF 8  
HOLE No.  
BHC04



**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC04**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      **GRID REFERENCE: TM 53859 92985**      **SHEET 6 OF 8**  
 FIELDWORK BY: DRILLT      DATE:      300mm cased from 0.0 to 4.0m      **DATES 04-Sep-17 -**  
 TEMPLATE REF: GEL AGS BH BETA      250mm cased from 4.0 to 16.0m      **PROJECT NO. 2543,G1**

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0	10	20	30	40														
				Dark grey silty medium and coarse SAND with fine flint gravel, shell fragments and occasional shells and sandy clay bands (continued)																					
												28.00		B29											
												29.00		B30											
												30.00		B31											
												31.00		B32											
												32.00		B33	17 21 19 23 8		88*								Continued blowing sands from 32m to 39m depth
												33.00													

GEL AGS BH BETA 2543,G1 - LAKE LOTHING.GPJ\_GINT STD AGS 3 1.GDT 5-10-17

\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample    C Cone penetration test    (35) Undisturbed sample blow count  
 U Undisturbed sample    K Permeability test    SPT N N = SPT N value (blows after seating)  
 P Piston sample    N\*120 = Total blows/penetration including seating  
 J Disturbed jar sample    <425 Sample % passing 425 micron sieve  
 ES Environmental soil sample    W Water Sample

DEPTH All depths, level and thicknesses in metres



**PROJECT No.**  
2543,G1  
**SHEET**  
6 OF 8  
**HOLE No.**  
BHC04

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC04**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      **GRID REFERENCE: TM 53859 92985**  
 FIELDWORK BY: DRILLT      DATE:      300mm cased from 0.0 to 4.0m      **DATES 04-Sep-17 -**  
 TEMPLATE REF: GEL AGS BH BETA      250mm cased from 4.0 to 16.0m      **PROJECT NO. 2543,GI**

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Dark grey silty medium and coarse SAND with fine flint gravel, shell fragments and occasional shells and sandy clay bands (continued)	○								33	S	3 4 3 4 1 1	9							
					○								34	S	4 4 2 1 3 1	7							
					○								35										
					○								36.00	B34									
					○								37										
					○								38										

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS 3 1.GDT 5-10-17

\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample    C Cone penetration test    (35) Undisturbed sample blow count  
 U Undisturbed sample    K Permeability test    SPT N N = SPT N value (blows after seating)  
 P Piston sample    N\*120 = Total blows/penetration including seating  
 J Disturbed jar sample    <425 Sample % passing 425 micron sieve  
 ES Environmental soil sample    W Water Sample

DEPTH All depths, level and thicknesses in metres



**PROJECT No.**  
2543,GI  
**SHEET**  
7 OF 8  
**HOLE No.**  
BHC04



<b>CLIENT: Suffolk County Council</b>				<b>PROJECT: Lake Lothing</b>						<b>GROUND LEVEL m</b>					<b>HOLE No. BHC05</b>									
LOGGED BY: JG FIELDWORK BY: TEMPLATE REF: GEL AGS BH BETA			CHECKED BY: LF DATE:			EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m						Coordinates: ,					SHEET 1 OF 8							
												DATES 16/03/2018 -					PROJECT NO. 2543,G1							
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
								SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
				CONCRETE			0.00						0											
				MADE GROUND (Dark grey brown gravelly clayey fine to coarse sand. Gravel of angular to subrounded fine and medium concrete and flint)			0.30						0.40	B1 + J1										VOC = 1ppm (peak)
													0.50	W1										
													0.60	B2										VOC = 2ppm (peak)
													0.90	J2										
				Grey brown silty fine SAND			1.20						1.20	B3										VOC = 1ppm (peak)
														J3										
														B5	10									VOC = 1ppm (peak)
														J4	01									
														C	01									
															01									
				Dark grey and black sandy CLAY with moderate natural organic odour			2.00						1.90	D6										VOC = 1ppm (peak)
													2.00	B7										
														J5										
													2.30	B9										
													2.50	J6										VOC = 1ppm (peak)
													3.00	B12	(15)									VOC = 1ppm (peak)
													3.00	J7										
													3.45	UT10										
														D11										
													4.00	B13	11									VOC = 2ppm (peak)
														J8	22									
														C	22									
															22									
				Dark grey sandy CLAY. Sand is fine			4.50																	
													4.60	D14										
													5.00	B15	(24)									VOC = 1ppm (peak)
														J9										
														UT										

GEL AGS BH BETA 2543,G1 - LAKE LOTHING\_05-12-17 -AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_26/4/18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT NO.  
 2543,G1  
 SHEET  
 1 OF 8  
 HOLE No.  
 BHC05

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC05												
LOGGED BY: JG		CHECKED BY: LF		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 2 OF 8												
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 16/03/2018 -				PROJECT NO. 2543,GI												
TEMPLATE REF: GEL AGS BH BETA																								
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		$\rho$ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0 10 20 30 40																	
				Dark grey sandy CLAY. Sand is fine (continued)																				
				Grey brown slightly clayey fine SAND with occasional fine flint gravel			6.00			6.00	6	ES S	B17 J10	23 46 67	23									VOC = 0ppm
										7.00	7	ES S	B19 J11	27 66 78	27									VOC = 1ppm (peak)
										8.00	8	ES S	B21 J12	27 57 78	27									VOC = 1ppm (peak)
										9.00	9	ES S	B23 J13	21 32 88	21									VOC = 0ppm
										10.00	10	ES S	B25 J14	46 912 1312	46									VOC = 1ppm (peak)
										6.4	11													

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST.GPJ\_GINT STD\_AGS 3\_1.GDT\_26/4/18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test Blows, SPT N  
 C Cone penetration test N = SPT N value (blows after seating)  
 K Permeability test N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT NO.  
2543,GI  
 SHEET  
2 OF 8  
 HOLE No.  
BHC05

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_26/4/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC05</b>			
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: ,			SHEET 3 OF 8	
TEMPLATE REF: GEL AGS BH BETA		DATES 16/03/2018 -									PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
				Grey brown slightly clayey fine SAND with occasional fine flint gravel <i>(continued)</i>				0 10 20 30 40 64		11.00	11	S	B27	6 8 13 15 17 5	64*									
				Grey sandy CLAY. Sand is fine		12.70				12.00	12	S	B29	2 3 4 3 6 7	20									
				Grey slightly clayey fine SAND		13.60				13.00 13.00- 13.45	13		B47 UT30	(28)										
										13.60			D31											
										14.00	14	S	B33	4 8 13 16 17 4	62*									
										15.00	15	S	B35	4 9 8 9 11 8	36									
										16.00	16	C	B36	4 5 5 6 7 6	24									

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No  
2543,GI

SHEET  
3 OF 8

HOLE No.  
BHC05

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC05</b>		
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: ,			SHEET 4 OF 8
TEMPLATE REF: GEL AGS BH BETA					DATES 16/03/2018 -			PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Grey slightly clayey fine SAND (continued)																			
				Grey silty fine SAND	X	17.50							17.00	S	B38	4 8 10 12 13 15	50*						
				18.00 - 18.50 Occasional coarse subangular gravel or cobbles of flint	X								18.00		B41 UT39								
					X								18.60		D40								
					X								19.00	S	B43	6 5 7 8 9 9	33						
				Grey silty fine SAND	X	19.90							20.00		B45 UT44								
					X								21.00	S	B48 D46	10 12 18 20 12	72*						
					X								22.00										

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST.GPJ\_GINT STD\_AGS 3\_1.GDT\_26/4/18


\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N  
SPT N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No  
2543,GI  
SHEET  
4 OF 8  
HOLE No.  
BHC05

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC05**  
 LOGGED BY: JG      CHECKED BY: LF      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: ,  
 FIELDWORK BY:      DATE:      Uncased to 40.0 m      DATES 16/03/2018 -  
 TEMPLATE REF: GEL AGS BH BETA      PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>			
								0	10	20	30	40															
				Grey silty fine SAND (continued)	X								22.00	22	S	B50 D49	4 7 10 12 13 14	49									
					X								22.90	23	S	D51 B52	4 10 12 14 8 9	43									
					X								24.00	24	S	B54 D53	2 14 15 15 14 6	66*									
					X								25.00	25	S	B56 D55	13 12 14 16 20	75*									
					X								25.80	26	S	D57 B58	7 9 15 17 18	66*									
					X								27.00	27	S	B60 D59	5 7 10 12 18 10	62*									
				Grey silty fine SAND with occasional fine shell fragments.	X								27.30														

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_26/4/18

\*WATER Standing water level    PIEZOMETER    Upper seal    **SAMPLE AND TEST KEY**  
 Water strikes    Response zone    **D** Small disturbed sample    **S** Standard penetration test    Blows    SPT blows for each 75mm increment  
 Lower seal    **B** Bulk disturbed sample    **C** Cone penetration test    N = SPT N value (blows after seating)  
**U** Undisturbed sample    **K** Permeability test    SPT N    N\*120 = Total blows/penetration including seating  
**P** Piston sample    **J** Disturbed jar sample    <425    Sample % passing 425 micron sieve  
**ES** Environmental soil sample  
**W** Water Sample

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

**PROJECT No**  
 2543,GI  
**SHEET**  
 5 OF 8  
**HOLE No.**  
 BHC05



CLIENT: **Suffolk County Council** PROJECT: **Lake Lothing** GROUND LEVEL m HOLE No. **BHC05**

LOGGED BY: JG  
 FIELDWORK BY:  
 TEMPLATE REF: GEL AGS BH BETA

CHECKED BY: LF  
 DATE:

EXCAVATION METHOD: Cable Percussion (shell and auger)  
 Uncased to 40.0 m

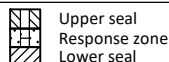
Coordinates: ,  
 DATES 16/03/2018 -

SHEET 6 OF 8  
 PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata	Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
						Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m³
				Grey silty fine SAND with occasional fine shell fragments. (continued)																			

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 -AGS TEST.GPJ\_GINT STD\_AGS 3 1.GDT\_26/4/18

\*WATER Standing water level  
 Water strikes  
 PIEZOMETER



SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S S Standard penetration test  
 C Cone penetration test  
 K Permeability test  
 Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No  
**2543,GI**  
 SHEET  
**6 OF 8**  
 HOLE No.  
**BHC05**

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_26/4/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC05</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 16/03/2018 -		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>
							0	10	20	30	40											
				Grey silty fine SAND with occasional fine shell fragments. (continued)	x							33										
					x							33.50	S	B73 D72	11 11 5 5 6 20	36						
					x							34										
					x							34.50	S	B75 D74	6 9 19 23 8	65*						
					x							35										
				Grey silty slightly clayey fine SAND.	x							35.40										
					x							35.50	S	B77 D76	8 17 18 24 8	75*						
					x							36										
					x							36.50	S	B79 D78	25 31 19	75*						
					x							37										
					x							37.50	S	B81 D80	10 15 50	75*						
					x							38										

<p>*WATER  Standing water level</p> <p> Water strikes</p>	<p>PIEZOMETER </p>	<p>Upper seal </p> <p>Response zone </p> <p>Lower seal </p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT N</p> <p>SPT N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	<p>Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk</p>	<p>PROJECT No 2543,GI</p> <p>SHEET 7 OF 8</p> <p>HOLE No. BHC05</p>
---	--------------------	---	--	--	---	--	---

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC05</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 16/03/2018 -		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
								0	10	20	30	40	75												
				Grey silty slightly clayey fine SAND. (continued)	X								38.50	S	B83 D82	14 11 38 12	75*								
					X								39												
					X								39.50		B84										
					X			40.00					40.00	S	D85	25 35 15	75*								
					X								41												
					X								42												
					X								43												
					X								44												

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST.GPJ\_GINT STD\_AGS 3\_1.GDT\_26/4/18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

SPT blows for each 75mm increment  
 (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No  
 2543,GI

SHEET  
 8 OF 8

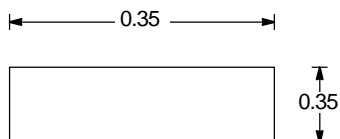
HOLE No.  
 BHC05



### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>BHC06</b>
Job No <b>2543,GI</b>	Date <b>28-07-17</b> <b>28-07-17</b>	Ground Level (m) <b>2.40</b>	Grid Reference ( )	
Fieldwork By <b>SG</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.17	CONCRETE: Pale grey fine to medium grained. No rebar identified.				
0.17-0.30	MADE GROUND (sub-base): Dark orange brown slightly gravelly fine to coarse sand with frequent cobbles of slightly dark grey/black stained concrete. Gravel is angular to sub-rounded fine to coarse quartz and flint.		0.20	J1ES	VOC = 0 ppm (peak)
0.30-1.25	Possible MADE GROUND: Black stained (loose) silty slightly gravelly fine to medium sand with heavy hydrocarbon odour. Gravel is angular to sub-rounded fine to coarse flint.		0.40	J2ES	VOC = 6 ppm (peak)
			0.50	J3ES	VOC = 122 ppm (peak)
	0.60 becoming dark grey medium to coarse sand with occasional black stained mottling and slight hydrocarbon odour.		0.70	J4ES	VOC = 9 ppm (peak)
					Moderate inflow of water at 1 m - Hydrocarbon sheen at surface of water level
					End of Inspection Pit at 1.25m bgl



Shoring/Support: None  
 Stability: Collapse to 1.12m

GEL\_AGS\_TP\_BETA\_2543,GI - LAKE LOTHING.GPJ GINT STD\_AGS 3\_1.GDT 29/7/17

All dimensions in metres Scale 1:12.5	Method Inspection pit	Plant Used HAND DUG	Checked By <b>SG</b>
--	-----------------------	---------------------	-------------------------

CLIENT: Suffolk County Council

PROJECT: Lake Lothing

GROUND LEVEL 2.401m

HOLE No. BHC06

LOGGED BY: LF  
FIELDWORK BY: DRILLT  
TEMPLATE REF: GEL AGS BH BETA

CHECKED BY: SG  
DATE: 28-Jul-17

EXCAVATION METHOD: Cable Percussion (shell and auger)  
Uncased to 45.0 m

GRID REFERENCE:

SHEET 1 OF 9

DATES 28-Jul-17 - 01-Sep-17

PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
					Leg	Reduced Level	Depth	SPT 'N' Value				Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
								0	10	20	30									40	
				CONCRETE: Pale grey fine to medium grained. No rebar identified. MADE GROUND (sub-base): Dark orange brown slightly gravelly fine to coarse sand with frequent cobbles of slightly dark grey/black stained concrete. Gravel is angular to sub-rounded fine to coarse quartz and flint. Possible MADE GROUND: Black stained (loose) silty slightly gravelly fine to medium sand with heavy hydrocarbon odour. Gravel is angular to sub-rounded fine to coarse flint. 0.60 becoming dark grey medium to coarse sand with occasional black stained mottling and slight hydrocarbon odour.				0												VOC = 0 ppm (peak)	
				Possible MADE GROUND (Dark brown clayey Sand and Gravel of angular to subrounded fine to coarse flint. Sand is fine and medium.															VOC = 6 ppm (peak) VOC = 122 ppm (peak)		
	1.00	1.02																	VOC = 9 ppm (peak)		
28-07 +20 mins																			Moderate inflow of water at 1m - Hydrocarbon sheen at surface of water level End of Inspection Pit at 1.25m bgI		
				Black sandy CLAY with natural organic odour.															VOC = 0 ppm (peak)		
				3.50 band of fine to coarse subangular to subrounded flint gravel 3.80 becoming very sandy with depth															VOC = 0 ppm (peak)		
				Pale grey and grey mottled gravelly fine SAND with grey sandy clay pockets. Gravel of subangular to subrounded medium and coarse flints.															UT100 no recovery, SPT taken - sunk under weight of hammer VOC = 0 ppm (peak) - 4m		
																			VOC = 0 ppm (peak)		

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 1-9-17

\*WATER Standing water level PIEZOMETER

Upper seal Response zone Lower seal

SAMPLE AND TEST KEY

- D Small disturbed sample
- B Bulk disturbed sample
- U Undisturbed sample
- P Piston sample
- J Disturbed jar sample
- ES Environmental soil sample
- W Water Sample

DEPTH All depths, level and thicknesses in metres

- S Standard penetration test
- C Cone penetration test
- K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count

SPT N N = SPT N value (blows after seating)

<425 N\*120 = Total blows/penetration including seating

<425 Sample % passing 425 micron sieve



PROJECT No  
2543,GI

SHEET  
1 OF 9

HOLE No.  
BHC06

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 2.401m</b>		<b>HOLE No. BHC06</b>	
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 28-Jul-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 45.0 m		GRID REFERENCE:	
				DATES 28-Jul-17 - 01-Sep-17		SHEET 2 OF 9	
						PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>
							0	10	20	30	40											
				Pale grey and grey mottled gravelly fine SAND with grey sandy clay pockets. Gravel of subangular to subrounded medium and coarse flints. (continued)								5.50	B D	B6 D3								
				6.00 occasional bands of orange brown sand								6			00 00 21	3						
				Orange brown and grey sandy CLAY								6.50										
												7.00	B D	B7 D4								
												7.00-7.50	ES S	J10 P1								Piston sample: 50% recovery, soils too firm; moderate sample quality but only ~50%
				Orange brown and grey brown silty fine SAND								7.50	B D	B8 D5								Water added, samples recovered as slurry
												8.00	ES UT100	J11 U1								UT100: 20% recovery; poor quality sample due to sandy component
												8.50-9.00	B	B9								
				Grey brown clayey SAND with pockets of clay								9.00	B	B10								Samples very disturbed and mixed together
												9.60-9.80	B	B11								
												10.00	B ES	B12 J12								

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 1-9-17

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
2 OF 9  
HOLE No.  
BHC06

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 2.401m</b>		<b>HOLE No. BHC06</b>	
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 28-Jul-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 45.0 m		GRID REFERENCE:	
				DATES 28-Jul-17 - 01-Sep-17		SHEET 3 OF 9	
						PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Grey brown clayey SAND with pockets of clay <i>(continued)</i>								11.00	B	B13									
												12.00	B	B14									
												13.00	B	B15									
												14.00	B	B16									
												15.00	B	B17	10 00 10	1							
												16.00	B	B18	11 21 11	5							

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 1-9-17

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N  
SPT N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve



PROJECT No  
2543,GI  
SHEET  
3 OF 9  
HOLE No.  
BHC06

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 2.401m</b>		<b>HOLE No. BHC06</b>	
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 28-Jul-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 45.0 m		GRID REFERENCE:	
				DATES 28-Jul-17 - 01-Sep-17		SHEET 4 OF 9	
						PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0	10	20	30	40													
				Grey brown clayey SAND with pockets of clay (continued)																				
												17.00	B	B19	10 20 01	3								
												18.00	B	B20										
												19.00	B	B21										
												19.00-19.45	D	D7									UT100: 90% recovery	
												19.45	UT100	U2										
												19.50	B	B22										
												20			5 6 6 6 9 13	34								
												20.40-20.70	B	B23	11 17 23 32 45	128*								
												21.00	B	B24										
												21.00-21.45	D	D8										UT100: 0% recovery due to sand component
												21.45	UT100	U3										
				Grey silty gravelly coarse SAND with clayey sand pockets and fine white bivalve shells. Gravel of subangular to subrounded fine to coarse flints.								21.40												

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 1-9-17

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
4 OF 9  
HOLE No.  
BHC06



CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL 2.401m				HOLE No. BHC06									
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 28-Jul-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 45.0 m				GRID REFERENCE:				SHEET 5 OF 9									
								DATES 28-Jul-17 - 01-Sep-17				PROJECT NO. 2543,GI									
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %
				Grey silty gravelly coarse SAND with clayey sand pockets and fine white bivalve shells. Gravel of subangular to subrounded fine to coarse flints. (continued)			0 10 20 30 40														
										22.00	B	B25	2 2	10							
										22.00-	B	B25a	2 3								
										22.50			2 3								
										23.00	UT100	B26									UT100: 0% recovery due to sand component
										24.00	B	B27	3 3 2 2 3 3	10							
										25.00	B	B28									Blowing sands encountered from 25m to 33m depth
										27.00	B	B29									

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 1-9-17

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test, C Cone penetration test, K Permeability test

Blows SPT N: SPT blows for each 75mm increment (35) Undisturbed sample blow count, N = SPT N value (blows after seating), N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve



PROJECT No  
2543,GI  
SHEET  
5 OF 9  
HOLE No.  
BHC06

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 2.401m</b>		<b>HOLE No. BHC06</b>	
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 28-Jul-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 45.0 m		GRID REFERENCE:	
				DATES 28-Jul-17 - 01-Sep-17		SHEET 6 OF 9	
						PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Grey silty gravelly coarse SAND with clayey sand pockets and fine white bivalve shells. Gravel of subangular to subrounded fine to coarse flints. (continued)																			
												28.00	28	B	B30								
												29.00	29	B	B31								
												30.00	30	B	B32								
												31.00	31	B	B33								
												32.00	32	B	B34								
													33										

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 1-9-17

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
6 OF 9  
HOLE No.  
BHC06

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 2.401m</b>		<b>HOLE No. BHC06</b>	
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 28-Jul-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 45.0 m		GRID REFERENCE:	
				DATES 28-Jul-17 - 01-Sep-17		SHEET 7 OF 9	
						PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0	10	20	30	40													
				Dark grey very sandy CLAY with fine white shell fragments and occasional angular to subangular black flint		33.00						33.00	B	B35										
												34.00	B	B36	7 6	6 12	11 19	48						
												35.00	B	B37	12 9	9 10	11 9	39						
												36.00	B	B38	(74)									UT100: 100% recovery
												37.00	B	B39	7 8	6 16	12 11	45						
				Dark grey clayey fine SAND with clay pockets and fine white shell fragments		38.00						38.00	B	B40	(17)									UT100: 60% recovery, poor quality sample due to sandy component

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 1-9-17

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
7 OF 9  
HOLE No.  
BHC06

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 2.401m</b>		<b>HOLE No. BHC06</b>	
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 28-Jul-17		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 45.0 m		GRID REFERENCE:	
				DATES 28-Jul-17 - 01-Sep-17		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>
								0	10	20	30	40										
				Dark grey clayey fine SAND with clay pockets and fine white shell fragments (continued)																		
										39.00	39	B	B41	10 00 00	0							
										40				21 23 12	8							
										41.00	41	B	B42	44 53 46	18							
										42.00	42	B	B43	24 32 44	13							
										43.00	43	B	B44	54 24 36	15							
										44												

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 1-9-17

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
8 OF 9  
HOLE No.  
BHC06

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL 2.401m**      **HOLE No. BHC06**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      **GRID REFERENCE:**      **SHEET 9 OF 9**  
 FIELDWORK BY: DRILLT      DATE: 28-Jul-17      **Uncased to 45.0 m**      **DATES 28-Jul-17 - 01-Sep-17**      **PROJECT NO. 2543,GI**  
 TEMPLATE REF: GEL AGS BH BETA

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>			
				Dark grey clayey fine SAND with clay pockets and fine white shell fragments (continued)				0	10	20	30	40	44.00	B	B45	6 5 5 6 7 4	22									
				becoming very clayey with depth						45.00			45			2 1 1 4 5 4	14									
													46													
													47													
													48													
													49													

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 1-9-17

\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    **SAMPLE AND TEST KEY**  
 Response zone    D Small disturbed sample  
 Lower seal    B Bulk disturbed sample  
 U Undisturbed sample    C Cone penetration test  
 P Piston sample    K Permeability test  
 J Disturbed jar sample  
 ES Environmental soil sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 W Water Sample    SPT N    N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425    Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



**PROJECT No**  
2543,GI  
**SHEET**  
9 OF 9  
**HOLE No.**  
BHC06

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC06A**  
 LOGGED BY: JG      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: ,  
 FIELDWORK BY:      DATE:      Uncased to 2.9 m      DATES 28-Mar-18 - 28-Mar-18      SHEET 1 OF 1  
 TEMPLATE REF: GEL AGS BH BETA      PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>
							0	10	20	30	40												
				CONCRETE		0.00						0											
				MADE GROUND (Dark brown gravelly fine to coarse sand. Gravel of angular to subrounded fine to coarse flint, brick and occasional pottery)		0.20						0.30	B1										
		1.10		MADE GROUND (Dark brown slightly gravelly fine to coarse sand. Gravel of angular to subrounded fine to coarse flint)		1.10						1.20	S B3	10	10	01	2						Slow inflow of water at 1.1m No recovery from SPT
		1.10		MADE GROUND (Dark grey silty fine sand)		1.70						1.70	B4										
				MADE GROUND (Dark grey silty fine sand)		1.70						1.70	S B4	10	10	10	2						No recovery from SPT
				MADE GROUND (Black sandy clay)		2.60						2.60	B6										Obstruction at 2.1m depth - casing at angle. Casing left in-situ until examination by utilities company
						2.90																	

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT 6-4-18

\*WATER Standing water level    PIEZOMETER  
 Water strikes

**DEPTH** All depths, level and thicknesses in metres

**PIEZOMETER** Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**

D	Small disturbed sample	S	Standard penetration test	Blows	SPT blows for each 75mm increment
B	Bulk disturbed sample	C	Cone penetration test	SPT N	(35) Undisturbed sample blow count
U	Undisturbed sample	K	Permeability test	N	= SPT N value (blows after seating)
P	Piston sample			N*120	= Total blows/penetration including seating
J	Disturbed jar sample			<425	Sample % passing 425 micron sieve
ES	Environmental soil sample				
W	Water Sample				



**PROJECT No**  
2543,GI

**SHEET**  
1 OF 1

**HOLE No.**  
BHC06A

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>				<b>HOLE No. BHC06B</b>		
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m				Coordinates: ,		SHEET 1 OF 8	
TEMPLATE REF: GEL AGS BH BETA						DATES 29/03/2018 -				PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
								SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>		
0	10	20	30	40																						
				CONCRETE + SUB-BASE (Orange brown sand and gravel. Gravel of angular to subrounded flint)	[Pattern]		0.00					0														
				MADE GROUND (Dark grey brown and black silty fine to coarse sand with moderate natural organic odour)	[Pattern]		0.30					0.30	B1													VOC = 0ppm
		0.90										0.45	ES	J1												
				Grey gravelly CLAY with occasional orange brown sandy clay pockets. Gravel of subangular to rounded fine to coarse chalk	[Pattern]		1.10					1.10	S	B2	10		0									Slow inflow of water at 0.9m Bentonite seal installed between 1.9m and 1.0m depth
												1.30	B4		00											VOC = 1ppm (peak)
												1.35	J2		00											VOC = 1ppm (peak)
				Grey brown fine SAND with pockets of grey clay	[Pattern]		1.50					1.60	ES	J3												
				Dark grey sandy CLAY with moderate to strong natural organic odour	[Pattern]		2.00					2.00	S	B6	10		0									
												2.60	ES	J4												VOC = 1ppm (peak)
													S		10		0									
												3.40		B8	00											
												3.60	ES	J5												VOC = 1ppm (peak)
													S		10		1									
												4.60		B10	00											
				Dark yellow brown and orange brown mottled silty fine SAND	[Pattern]		4.60					4.60	ES	J6												VOC = 1ppm (peak)
												4.70														
													S		10		5									
												5.40		B12	01											
															13											

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test Blows SPT N (35) Undisturbed sample blow count N = SPT N value (blows after seating) N\*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve

C Cone penetration test SPT N

K Permeability test

Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No. 2543,GI  
SHEET 1 OF 8  
HOLE No. BHC06B

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_27/4/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC06B</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 29/03/2018 -		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>	
								0	10	20	30	40											
				Dark yellow brown and orange brown mottled silty fine SAND (continued)	X							5.60	ES	J7									VOC = 0ppm
				6.00 Becoming pale grey mottled with depth	X							6	S		13	25							
					X							6.40		B14	55								
					X							6.60	ES	J8	78								VOC = 2ppm (peak)
					X							7	S		36	35							
					X							7.40		B16	77								
					X							7.60	ES	J9	1011								VOC = 3ppm (peak)
					X							8	S		48	62*							
					X							8.40		B18	1115								
					X							8.60	ES	J10	1410								VOC = 2ppm (peak)
				Dark grey and orange brown mottled slightly sandy CLAY	H		9.00					9	S		35	36							
					H							9.40		B20	79								
					H							9.60	ES	J11	911								VOC = 2ppm (peak)
				Dark yellow brown very silty fine SAND	X		9.90					9.90		B21									
					X							10.00	S	B23	11	7							VOC = 0ppm
					X							10.10	ES	J12	12								
					X										22								

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No 2543,GI  
 SHEET 2 OF 8  
 HOLE No. BHC06B

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_27/4/18



**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC06B**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: ,  
 FIELDWORK BY:      DATE:      Uncased to 40.0 m      DATES 29/03/2018 -  
 TEMPLATE REF: GEL AGS BH BETA      PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation		Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>
				Dark yellow brown very silty fine SAND (continued)	X		0	0 10 20 30 40	11.00	S	B25	12 22 12	7							
					X				12	S		69 1214 186	65*							
				Dark grey / light grey CLAY			13.40		12.40		B27									
									13	S		56 42 22	10							
				Dark brown coarse SAND.			14.30		14	S		79 1010 129	41							
									15	S		47 711 1416	48							
				Dark grey silty fine SAND	X		15.60		16	S		37 710 1111	39							

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_27/4/18

\*WATER Standing water level    PIEZOMETER    Upper seal    **SAMPLE AND TEST KEY**    D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment    (35) Undisturbed sample blow count    N = SPT N value (blows after seating)    N\*120 = Total blows/penetration including seating    <425 Sample % passing 425 micron sieve

Water strikes    Response zone    U Undisturbed sample    C Cone penetration test    SPT N    ES Environmental soil sample    W Water Sample

Lower seal    P Piston sample    J Disturbed jar sample    K Permeability test

**DEPTH** All depths, level and thicknesses in metres

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk  
**PROJECT No** 2543,GI  
**SHEET** 3 OF 8  
**HOLE No.** BHC06B

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC06B</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 29/03/2018 -		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Dark grey silty fine SAND (continued)	X																		
					X								17	S	3 5 7 14 19 10	58*							
					X								18	S	7 12 16 19 15	69*							
					X								19	S	7 9 11 14 18 7	66*							
					X								20	S	8 11 18 22 10	69*							
				Dark grey slightly sandy CLAY			20.60						21										
				Dark grey silty fine SAND	X		21.70						22										

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_27/4/18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal


SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

SPT blows for each 75mm increment (35) Undisturbed sample blow count

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No  
2543,GI  
 SHEET  
4 OF 8  
 HOLE No.  
BHC06B

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC06B**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: ,  
 FIELDWORK BY:      DATE:      Uncased to 40.0 m      DATES 29/03/2018 -  
 TEMPLATE REF: GEL AGS BH BETA      PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
				Dark grey silty fine SAND (continued)				0	10	20	30	40	22	S	4 6 6 7 9 11	33									
				Dark grey silty sandy CLAY		23.60							23	S	4 9 8 9 12 11	40									
				Dark grey fine silty SAND with shell fragments		26.40							24	S	6 7 8 9 12 18	47									
													25	S	5 7 8 10 10 10	38									
													26												
													27	S	7 11 19 24 7	68*									

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_27/4/18

\*WATER Standing water level    PIEZOMETER    Upper seal    **SAMPLE AND TEST KEY**    D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count    N = SPT N value (blows after seating)    N\*120 = Total blows/penetration including seating    <425 Sample % passing 425 micron sieve

Water strikes    Response zone    U Undisturbed sample    C Cone penetration test    SPT N    ES Environmental soil sample    W Water Sample

Lower seal    P Piston sample    J Disturbed jar sample    K Permeability test

**DEPTH** All depths, level and thicknesses in metres

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk  
**PROJECT No** 2543,GI  
**SHEET** 5 OF 8  
**HOLE No.** BHC06B

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC06B</b>		
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: ,			SHEET 6 OF 8
TEMPLATE REF: GEL AGS BH BETA					DATES 29/03/2018 -			PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
								0	10	20	30	40													
				Dark grey fine silty SAND with shell fragments <i>(continued)</i>	X									28	S	8 14 27 23	72*								
					X									29	S	11 14 29 21	75*								
					X									30	S	14 11 22 28	75*								
					X									31	S	19 6 27 23	75*								
					X									32	S	25 32 18	75*								
					X									33											

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_27/4/18

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal  
 Response zone  
 Lower seal

**SAMPLE AND TEST KEY**  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

**TEST KEY**  
S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT blows for each 75mm increment  
SPT N (35) Undisturbed sample blow count  
N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

**PROJECT No**  
2543,GI

**SHEET**  
6 OF 8

**HOLE No.**  
BHC06B

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC06B</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 29/03/2018 -		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes						
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>				
								0	10	20	30	40	75															
				Dark grey fine silty SAND with shell fragments (continued)	X									33	S	18 7 43 7	75*											
					X									34	S	21 4 50	75*											
					X									35	S	16 9 38 12	75*											
					X									36	S	20 5 25 25	75*											
					X									37	S	11 13 18 24 8	74*											
					X									38	S	20 5 50	75*											

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_27/4/18

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
∇	Water strikes		Response zone	AND	B Bulk disturbed sample	C Cone penetration test	N	(35) Undisturbed sample blow count
			Lower seal	TEST	U Undisturbed sample	K Permeability test	N	= SPT N value (blows after seating)
				KEY	P Piston sample		N*	120 = Total blows/penetration including seating
					J Disturbed jar sample		<425	Sample % passing 425 micron sieve
					ES Environmental soil sample			
					W Water Sample			

DEPTH All depths, level and thicknesses in metres

**Geosphere Environmental Ltd**  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

**PROJECT No**  
2543,GI  
**SHEET**  
7 OF 8  
**HOLE No.**  
BHC06B

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC06B**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: ,  
 FIELDWORK BY:      DATE:      Uncased to 40.0 m      DATES 29/03/2018 -  
 TEMPLATE REF: GEL AGS BH BETA      PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m <sup>3</sup>
							0	10	20	30	40												
				Dark grey fine silty SAND with shell fragments (continued)	X																		
													75	39	S	25	41	9	75*				
													75	40	S	22	3	38	12	75*			
														41									
														42									
														43									
														44									

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_27/4/18

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
∇	Water strikes		Response zone	AND	B Bulk disturbed sample	C Cone penetration test	N	(35) Undisturbed sample blow count
			Lower seal	TEST	U Undisturbed sample	K Permeability test	SPT N	N = SPT N value (blows after seating)
				KEY	P Piston sample			N*120 = Total blows/penetration including seating
					J Disturbed jar sample			Sample % passing 425 micron sieve
					ES Environmental soil sample			
					W Water Sample			

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

**PROJECT No**  
2543,GI

**SHEET**  
8 OF 8

**HOLE No.**  
BHC06B

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC07</b>	
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: ,		
					DATES 20/03/2018 - 27/03/2018			PROJECT NO. 2543,GI Lake Lothing	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
								SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m³		Cu kN/m²		
								0	10	20	30													40	
		0.75		Concrete with 5mm rebar at the base.		0.00																			
				MADE GROUND (Dark brown and black gravelly fine to coarse SAND with pockets of visually desiccated clay and moderate natural organic odour. Gravel of angular to subangular fine to coarse brick, concrete, charcoal and flint)		0.30																			VOC = 1 ppm (peak)
				Orange brown slightly gravelly fine to medium SAND. Gravel of subangular to subrounded fine to coarse flint.		0.60																			VOC = 0 ppm (peak) Inflow of water at 0.75m
				Dark brown slightly gravelly medium SAND with weak natural organic odour. Gravel of angular to subrounded fine to medium flint.		2.00																			VOC = 0 ppm (peak)
				Dark grey / black CLAY with moderate natural organic odour		3.70																			VOC = 0 ppm (peak)
				Dark grey very clayey medium and coarse SAND with weak to moderate natural organic odour.		4.60																			VOC = 0 ppm (peak)
				Black slightly sandy SILT/CLAY with strong natural organic odour and occasional white shell fragments.		5.00																			VOC = 0 ppm (peak)
				Slightly grey brown silty fine SAND.		5.80																			VOC = 0 ppm (peak)
				Dark grey with occasional brown pockets slightly sandy silty CLAY.		8.40																			VOC = 0 ppm (peak)
				Grey brown slightly silty fine SAND.		9.70																			VOC = 0 ppm (peak)

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17.GPJ GINT STD AGS 3 1.GDT 27/4/18

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
	Water strikes		Response zone	B Bulk disturbed sample	C Cone penetration test	SPT N	(35) Undisturbed sample blow count	
			Lower seal	U Undisturbed sample	K Permeability test		N = SPT N value (blows after seating)	
				P Piston sample			N*120 = Total blows/penetration including seating	
				J Disturbed jar sample			<425 Sample % passing 425 micron sieve	
				ES Environmental soil sample				
				W Water Sample				

DEPTH All depths, level and thicknesses in metres

**Geosphere Environmental Ltd**  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

**PROJECT No.**  
2543,GI Lake Lothing  
**SHEET**  
1 OF 4  
**HOLE No.**  
BHC07

Lothin

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC07**  
 LOGGED BY: JG      CHECKED BY:      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: ,      SHEET 2 OF 4  
 FIELDWORK BY: DRILLT      DATE:      Uncased to 40.0 m      DATES 20/03/2018 - 27/03/2018      PROJECT NO. 2543,GI Lake Lothing  
 TEMPLATE REF: GEL AGS BH BETA

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>
							0	10	20	30	40											
				Grey brown slightly silty fine SAND. (continued)	X							10.40	B25	14 16								
					X							11.40	B27	23 58 98	30							
					X							12.60	B29	22 57 12 16	40							
					X							13.40	B31	46 9 13 18 10	60*							
				Slightly brown grey becoming grey silty SAND with occasional subangular to subrounded flint gravel.	X		14.00					14.40	B33	23 57 9 11	32							
				Light grey silty fine SAND.	X		15.00					15.40	B35	67 89 12 18	47							
					X							16.40	B37	711 14 21 15	68*							
					X							17.40	B39	69 109 9 11	39							
					X							18.40	B41	812 18 22 10	70*							
					X							19.60	B43	78 15 15 13 7	65*							
				Dark grey slightly sandy CLAY.	X		19.60					20.00	UT44	(21)								
				Dark grey silty fine SAND with occasional shell fragments.	X		20.40					20.60	B46									

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17.GPJ\_GINT STD\_AGS 3\_1.GDT\_27/4/18

\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample    C Cone penetration test    N = SPT N value (blows after seating)  
 U Undisturbed sample    K Permeability test    N\*120 = Total blows/penetration including seating  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample    <425 Sample % passing 425 micron sieve  
 W Water Sample

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

**PROJECT No.** 2543,GI Lake Lothing  
**SHEET** 2 OF 4  
**HOLE No.** BHC07

Lothing



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>					<b>HOLE No. BHC07</b>	
LOGGED BY: JG	CHECKED BY:	EXCAVATION METHOD: Cable Percussion (shell and auger)			Coordinates: ,					SHEET 3 OF 4	
FIELDWORK BY: DRILLT	DATE:	Uncased to 40.0 m			DATES 20/03/2018 - 27/03/2018					PROJECT NO. 2543,GI Lake Lothing	
TEMPLATE REF: GEL AGS BH BETA											

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing			Laboratory Testing							Additional Tests and Notes								
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>						
								0	10	20	30	40	74																	
				Dark grey silty fine SAND with occasional shell fragments. (continued)	×								21																	
					×								21.40	B48	10 14 19 16 15	74*														
					×								75																	
					×								22																	
					×								22.40	B50	12 13 21 29	75*														
					×								71																	
					×								23																	
					×								23.40	B52	8 13 16 18 16	71*														
				Grey slightly clayey/silty fine SAND.	×		23.80						75																	
					×								24																	
					×								24.40	B54	14 11 18 22 10	75*														
					×								68																	
					×								25																	
					×								25.40	B56	6 12 17 23 10	68*														
				Dark grey silty SAND with shell fragments.	×		25.70						63																	
					×								26																	
					×								26.40	B58	5 8 12 18 20	63*														
					×								75																	
					×								27																	
					×								27.40	B60	15 10 22 28	75*														
					×								75																	
					×								28																	
					×								28.40	B62	18 7 19 19 12	75*														
					×								75																	
					×								29																	
					×								29.40	B64	18 7 25 25	75*														
					×								75																	
					×								30																	
					×								30.40	B66	25 32 18	75*														
					×								75																	
					×								31																	
					×																									
					×																									

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows SPT blows for each 75mm increment	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk
∇	Water strikes		Response zone	B Bulk disturbed sample	C Cone penetration test	(35) Undisturbed sample blow count	SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating	
			Lower seal	U Undisturbed sample	K Permeability test	<425 Sample % passing 425 micron sieve		
				P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample				



Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No.  
2543,GI Lake  
Lothing  
SHEET  
3 OF 4  
HOLE No.  
BHC07

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17.GPJ\_GINT STD\_AGS 3\_1.GDT\_27/4/18

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC07												
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m				Coordinates: ,				SHEET 4 OF 4												
								DATES 20/03/2018 - 27/03/2018				PROJECT NO. 2543,GI Lake Lothing												
Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0	10	20	30	40													
				Dark grey silty SAND with shell fragments. <i>(continued)</i>	X								31.40	B68										
					X								75											
					X								32		21 4	75*								
					X								32.40	B70	21 29									
					X								75											
					X								33		15 10	75*								
					X								33.40	B72	26 24									
					X								75											
					X								34		25 31	75*								
					X								34.40	B74	19									
					X								75											
					X								35		5 8	63*								
					X								35.40	B76	12 21									
					X								86		17									
					X								36		7 11	86*								
					X								36.40	B78	18 27									
					X								73		23									
					X								37		8 15	73*								
					X								37.40	B80	22 28									
					X								75											
					X								38		25 33	75*								
					X								38.40	B82	17									
					X								75											
					X								39		23 2	75*								
					X								39.40	B84	29 21									
					X								75											
					X								40		18 7	75*								
					X								40.00		22 28									
					X								41											
					X								42											

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17.GPJ\_GINT STD\_AGS 3\_1.GDT\_27/4/18

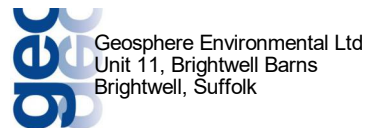
\*WATER Standing water level  
 Water strikes  
 PIEZOMETER

Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve



PROJECT No.  
 2543,GI Lake Lothing  
 SHEET  
 4 OF 4  
 HOLE No.  
 BHC07

Lothing

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC08</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 09-Mar-18 - 16-Mar-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>
							0	10	20	30	40											
				MADE GROUND (Dark brown and black silty gravelly fine to coarse sand with occasional inactive roots. Gravel of angular to subrounded fine to coarse flint, brick, charcoal, ash and occasional metal fragments.		0.00						0										
												0.10	B1									
												0.30	ES J1									VOC = 1ppm (peak)
				MADE GROUND (Dark brown and dark orange brown silty gravelly fine to coarse sand. Gravel of subangular to subrounded fine to coarse flint and occasional clinker and brick)		0.60						0.60	B2									
												0.80	ES J2									VOC = 1ppm (peak)
												1.40	S B4	11		4						
				POTENTIAL MADE GROUND (Orange brown silty gravelly medium sand with occasional pockets of dark brown sandy clay)								1.40			11							
												1.60	ES J3									VOC = 3ppm (peak)
												2.40	S B6	11		4						
												2.40			11							
												2.60	ES J4									VOC = 1ppm (peak)
												3.60	S B8	11		7						
												3.60			22							
				Black slightly sandy CLAY with moderate to strong natural organic odour and occasional wood fragments		3.60						3.70	ES J5									VOC = 1ppm (peak)
												4.00	S B10	23		12						
												4.20			33							
				Black and dark brown silty slightly gravelly fine to coarse SAND. Gravel of subangular to subrounded fine and medium flint and wood fragments								4.20			33							
				Pale grey brown slightly silty slightly gravelly medium SAND. Gravel of subangular to subrounded fine and medium flint																		
												4.80	ES B10									VOC = 0ppm
				Pale grey and yellow brown mottled very sandy CLAY. Sand is fine								4.80	J6									
												5.40	S B12	23		14						
												5.40			24							
															44							
				Grey silty fine and medium SAND		5.40						5.40										

\*WATER Standing water level PIEZOMETER

Upper seal Response zone Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample S Standard penetration test Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample C Cone penetration test N = SPT N value (blows after seating)  
 U Undisturbed sample K Permeability test SPT N N\*120 = Total blows/penetration including seating  
 P Piston sample ES Environmental soil sample <425 Sample % passing 425 micron sieve  
 J Disturbed jar sample  
 W Water Sample

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental  
 PROJECT No. 2543,GI  
 SHEET 1 OF 8  
 HOLE No. BHC08

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST.GPJ\_GINT STD\_AGS 3\_1.GDT\_19-3-18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC08</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 09-Mar-18 - 16-Mar-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation		Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>
				Grey silty fine and medium SAND ( <i>continued</i> )	X			0 10 20 30 40	5.60	ES	J7									VOC = 1ppm (peak)
				Dark yellow brown silty fine SAND with occasional grey clay pockets	X		6.00			S		3 4 5 3 4 4	16							VOC = 0ppm
					X				6.40 6.50	ES	B14 J8									VOC = 0ppm
					X				7.10	S		4 7 9 14 18 19	71*							VOC = 0ppm
					X				7.40 7.50	ES	B16 J9									VOC = 0ppm
					X				8.10	S		7 11 16 18 16	68*							VOC = 0ppm
					X				8.40 8.50	ES	B18 J10									VOC = 0ppm
					X				9.10	S		5 11 8 8 9 11	36							VOC = 0ppm
					X				9.40 9.50	ES	B20 J11									VOC = 0ppm
					X				10.10											No sample recovery from 10m SPT
					X				10.40 10.50	ES	B22 J12									VOC = 0ppm

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_19-3-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No.  
2543,GI  
SHEET  
2 OF 8  
HOLE No.  
BHC08

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC08</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 09-Mar-18 - 16-Mar-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	
				Dark grey slightly silty medium SAND	X	11.20	0 10 20 30 40	11.10	S		11 11 9 9 8 9	35									
				Dark yellow brown silty fine SAND	X	11.45		11.40	B24												
					X			12.00	S		4 3 2 4 4 8	18									
					X			12.40	B26												
				Dark grey coarse SAND	X	13.20		13.40	S		6 7 10 11 11 7	39									
					X			14.00	S		4 7 7 11 14 16	48									
					X			14.40	B30												
				Dark grey slightly silty medium SAND	X	15.40		15.40	S		9 11 16 14 18 2	70*									
					X			16.00	S		4 6 8 10 12 17	47									
					X			16.40	B34												

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_19-3-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No.  
2543,GI  
SHEET  
3 OF 8  
HOLE No.  
BHC08

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ GINT STD AGS 3 1.GDT 19-3-18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>				<b>HOLE No. BHC08</b>				
LOGGED BY: LF FIELDWORK BY: TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m				Coordinates: ,				SHEET 4 OF 8	
								DATES 09-Mar-18 - 16-Mar-18				PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>				
				Dark grey slightly silty medium SAND (continued)			0	10	20	30	40															
												17	S		5 7 8 10 10 10	38										
												17.40	B36													
												18	S		6 9 11 14 20 5	65*										
												18.40	B38													
												19	S		4 7 14 16 16 4	61*										
												19.40	B40													
				Dark grey slightly silty medium SAND with occasional white shell fragments					20.00			20	S		8 9 10 10 12 12	44										
												20.40	B42													
												21	S		8 17 50	75*										
												21.40	B44													
												22														

\*WATER Standing water level PIEZOMETER

Upper seal Response zone Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
SPT N N = SPT N value (blows after seating)  
<425 N\*120 = Total blows/penetration including seating  
Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No.  
2543,GI  
SHEET  
4 OF 8  
HOLE No.  
BHC08

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC08</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 09-Mar-18 - 16-Mar-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
				Dark grey slightly silty medium SAND with occasional white shell fragments ( <i>continued</i> )			0	10	20	30	40	68	22	S		6 12 17 23 10	68*							
				Dark grey CLAY		22.50							22.50	B46										
													23.00	UT47	(31)									
				Dark grey slightly sandy CLAY		23.50							23.60	B48										
													24	S		5 7 10 14 21 5	62*							
													24.40	B50										
													25.00	UT51	(29)									
				Dark grey coarse SAND with frequent white shell fragments		25.50							25.40	B52										
													26	S		11 14 31 19	75*							
													26.40	B54										
													27	S		10 9 50	69*							
													27.40	B56										

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ GINT STD AGS 3 1.GDT 19-3-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT blows for each 75mm increment  
(35) Undisturbed sample blow count  
N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No.  
2543,GI  
SHEET  
5 OF 8  
HOLE No.  
BHC08

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC08</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 09-Mar-18 - 16-Mar-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>
							0	10	20	30	40											
				Dark grey coarse SAND with frequent white shell fragments (continued)																		
												75										
												28	S	25 35 15	75*							
				Dark grey silty fine SAND with occasional white shell fragments								28.40		B58								
												75										
												29	S	14 11 18 22 10	75*							
												29.40		B60								
												75										
												30	S	19 6 22 28	75*							
												30.40		B62								
												75										
												31	S	16 9 16 24 10	75*							
												31.40		B64								
												75										
												32	S	5 8 12 18 20	63*							
												32.40		B66								
												63										
												68										

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_19-3-18


\*WATER Standing water level PIEZOMETER

Upper seal Response zone Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample S Standard penetration test Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample C Cone penetration test N = SPT N value (blows after seating)  
 U Undisturbed sample K Permeability test SPT N N\*120 = Total blows/penetration including seating  
 P Piston sample <425 Sample % passing 425 micron sieve  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental

PROJECT No. 2543,GI  
 SHEET 6 OF 8  
 HOLE No. BHC08



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>				<b>HOLE No. BHC08</b>		
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m				Coordinates: ,		SHEET 7 OF 8	
TEMPLATE REF: GEL AGS BH BETA								DATES 09-Mar-18 - 16-Mar-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40	68												
				Dark grey silty fine SAND with occasional white shell fragments (continued)	X								33	S	7 11 19 24 7	68*								
					X								33.40	B68										
					X								66	S	5 11 18 22 10	66*								
					X								34.40	B70										
					X								75	S	10 15 32 18	75*								
					X								35.40	B72										
					X								74	S	11 13 18 24 8	74*								
					X								36.40	B74										
					X								75	S	14 11 19 26 5	75*								
					X								37.40	B76										
					X								75	S	11 14 50	75*								
					X								38.40	B78										

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_19-3-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No.  
2543,GI  
SHEET  
7 OF 8  
HOLE No.  
BHC08



GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK).GPJ\_GINT STD AGS 3 1\_GDT\_30/4/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>			<b>HOLE No. BHC09</b>		
LOGGED BY: JG FIELDWORK BY: J&M TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m			Coordinates: ,		
							DATES 03/04/2018 -		
							PROJECT NO. 2543,GI Lake Lothing		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>
								0	10	20	30	40											
				Surfacing materials (Asphalt)			0.00						0										
				MADE GROUND (Multicoloured very gravelly SAND. Gravel is fine to coarse grey concrete, red brick, yellow brick and occasional pieces of cast iron)			0.13						0.30	B1									VOC = 0ppm
				MADE GROUND (Dark brown / black gravelly SAND. Gravel is fine and medium angular red brick and rounded subrounded flints)			0.60						0.60	J1 B2									VOC = 0ppm
				MADE GROUND (Dark brown / black gravelly SAND. Gravel is fine and medium angular red brick and rounded subrounded flints)			1.10						0.90	J3									VOC = 1ppm
				Pale brown silty fine SAND.			1.10						1.10	B3	33 33 33		12						
				Dark brown sandy CLAY with frequent medium and coarse rounded flint gravel.			1.80						1.60	B5									VOC = 1ppm
				Black slightly brown mottled organic CLAY.			2.20						1.70	J4									
							2.20						2.20	B7	10 11		4						VOC = 1ppm
							2.40						2.40	J5	11								
							2.70						2.70										
													3.40	B9	00 00 00								
													3.40										
													4.20	J6	00 00 00								VOC = 1ppm
													4.40	B11	00 00 00								
													4.40										
				Pale brown / orange brown medium SAND.			5.30						5.40	B13	34 77 87		29						VOC = 0ppm
													5.50	J7									
													5.50										
				Dark orange sandy CLAY			6.40						6.40	B15	24 33 64		16						VOC = 0ppm
													6.50	J8									
													6.50										
													7.40	B17	34 44 56		19						VOC = 0ppm
				Light orange brown silty fine SAND			7.60						7.40	J9									
													7.50										
													8.40	B19	13 34 69		22						VOC = 0ppm
													8.50	J10									
													8.50										
													9.40	B21	35 77 67		27						VOC = 0ppm
				Grey fine silty SAND			9.60						9.40	J11									
													9.80		24 79		36						VOC = 0ppm

*WATER Standing water level Water strikes	PIEZOMETER Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk	PROJECT No. 2543,GI Lake Lothing	SHEET 1 OF 5	HOLE No. BHC09
---	---	---	---	---	---	-------------------------------------	-----------------	-------------------

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543, GI - LAKE LOTHING. 05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK).GPJ\_GINT STD AGS 3 1.GDT 30/4/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC09</b>	
LOGGED BY: JG FIELDWORK BY: J&M TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
				DATES 03/04/2018 -		SHEET 2 OF 5	
						PROJECT NO. 2543,GI Lake Lothing	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation		Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
						Reduced Level	Depth	SPT 'N' Value	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
				Grey fine silty SAND (continued)	X			0 10 20 30 40	10.40	B23	9 11									
				Brown coarse SAND	.		11.20		11.40	B25	3 3 4 4 7 10	25								
				Grey silty CLAY	X		13.10		12.40	B27	4 8 9 10 12 18	49								
				Dark grey coarse SAND.	.		14.00		13.40	B29	3 5 3 5 6 7	21								
					.				14.40	B31	3 4 7 8 9 7	31								
					.				15.40	B33	7 8 10 12 12 11	45								
					.				16.40	B35	7 11 17 13 20	68*								
					.				17.40	B37	11 9 13 19 18	70*								
				Dark grey sandy CLAY	X		18.40		18.40	B39	4 6 6 6 6 10	28								
					.				19.00	UT40										
					.				19.60	B42										
				Dark grey silty CLAY	X		20.00		20.00	B44	8 9 8 7 10 13	38								

*WATER  Standing water level Water strikes	PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	SPT blows for each 75mm increment (35) Undisturbed sample blow count N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating	 Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk	PROJECT No. 2543,GI Lake Lothing SHEET 2 OF 5 HOLE No. BHC09
---	------------	---	---	---	---	--	---	--

DEPTH All depths, level and thicknesses in metres

Lothing

GEL AGS BH BETA 2543, GI - LAKE LOTHING. 05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK).GPJ\_GINT STD AGS 3 1\_GDT\_30/4/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC09</b>	
LOGGED BY: JG FIELDWORK BY: J&M TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
				DATES 03/04/2018 -		SHEET 3 OF 5	
						PROJECT NO. 2543,GI Lake Lothing	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>	
								0	10	20	30	40												
				Dark grey silty CLAY (continued)	X						21.00	21	UT45											
				Dark grey silty fine sandy CLAY	X		21.60				21.60	22	B47											
					X							22		46		36								
					X							22	B49	99										
					X							22		711										
					X							23	UT50											
					X							23	B51											
				Dark grey silty fine SAND with shelly gravel.	X		24.20					24		514		69*								
					X							24	B53	1719										
					X							24		14										
					X							25		617		73*								
					X							25	B55	2228										
					X							26		187		75*								
					X							26	B57	419										
					X							27		169		75*								
					X							27	B59	2723										
					X							28		1015		75*								
					X							28	B61	2525										
					X							29		196		75*								
					X							29	B63	3317										
					X							30		2529		75*								
					X							30	B65	21										
					X							31		1510		75*								
					X							31		2327										

*WATER  Standing water level Water strikes	PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	 Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk	PROJECT No. 2543,GI Lake Lothing	SHEET 3 OF 5	HOLE No. BHC09
---	------------	---	---	---	---	---	-------------------------------------	-----------------	-------------------

DEPTH All depths, level and thicknesses in metres

Lothin

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK).GPJ\_GINT STD AGS 3\_1\_GDT\_30/4/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC09</b>	
LOGGED BY: JG FIELDWORK BY: J&M TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
				DATES 03/04/2018 -		SHEET 4 OF 5	
						PROJECT NO. 2543,GI Lake Lothing	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
								0	10	20	30													40	
				Dark grey silty fine SAND with shelly gravel. (continued)	X						31.40	B67													
					X						32.00			11 13 22 28	74*										
					X						32.40	B69													
					X						33.00			14 11 21 29	75*										
					X						33.40	B71													
					X						34.00			15 10 18 22 10	75*										
					X						34.45	B73													
					X						35.00			14 11 22 28	75*										
					X						35.40	B75													
					X						36.00			25 31 19	75*										
					X						36.40	B77													
					X						37.00			11 13 27											
					X						37.40	B79													
					X						38.00			11 14 50	75*										
					X						38.40	B81													
					X						39.00			25 50											
					X						39.40	B83													
					X						40.00			9 10 10 10 14 16	69*										
					X						40.40	B85													
					X						41.00			11 14 19 23 8	75*										
					X						41.40	B87													
					X						42.00														

*WATER  Standing water level Water strikes	PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	SPT blows for each 75mm increment (35) Undisturbed sample blow count N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating	 Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk	PROJECT No. 2543,GI Lake Lothing	SHEET 4 OF 5	HOLE No. BHC09
---	------------	---	---	---	---	--	---	--	-----------------	-------------------

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK).GPJ\_GINT STD AGS 3 1\_GDT\_30/4/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC09</b>	
LOGGED BY: JG FIELDWORK BY: J&M TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
				DATES 03/04/2018 -		SHEET 5 OF 5	
						PROJECT NO. 2543,GI Lake Lothing	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes							
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>					
								0	10	20	30	40	67																
				Dark grey silty fine SAND with shelly gravel. <i>(continued)</i>	x			.	.	.	.	.	.	42															
					x			.	.	.	.	.	.	42.40	B89	6 11 11 14 25	67*												
					x			.	.	.	.	.	.	43															
					x			.	.	.	.	.	.	43.40	B91	10 15 50	75*												
					x			.	.	.	.	.	.	44															
					x			.	.	.	.	.	.	44.40	B93	14 11 36 14	75*												
					x			.	.	.	.	.	.	45		25 50													
					x			.	.	.	.	.	.	45.40	B95														
					x			.	.	.	.	.	.	46		25 50													
					x			.	.	.	.	.	.	46.40	B97														
					x			.	.	.	.	.	.	47		25 50													
					x			.	.	.	.	.	.	47.40	B99														
					x			.	.	.	.	.	.	48		25 50													
					x			.	.	.	.	.	.	48.40	B101														
					x			.	.	.	.	.	.	49		25 50													
					x			.	.	.	.	.	.	49.40	B103														
					x			.	.	.	.	.	.	50		25 50													
					x			.	.	.	.	.	.	51															
					x			.	.	.	.	.	.	52															

<p>*WATER  Standing water level</p> <p> Water strikes</p>	<p>PIEZOMETER </p>	<p>Upper seal </p> <p>Response zone </p> <p>Lower seal </p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT N</p> <p>SPT N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	<p>Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk</p>	<p>PROJECT No. 2543,GI Lake Lothing</p> <p>SHEET 5 OF 5</p> <p>HOLE No. BHC09</p>
---	--------------------	---	--	--	---	--	---

DEPTH All depths, level and thicknesses in metres

Lothing

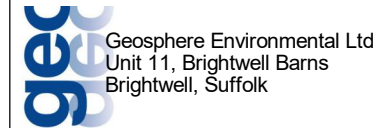
<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC10</b>		
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m			Coordinates: ,			SHEET 1 OF 10
TEMPLATE REF: GEL AGS BH BETA					DATES 03/04/2018 -			PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes					
								SPT 'N' Value					Blows	SPT N	<425 %	WC %	PL %	LL %	$\rho$ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>								
0	10	20	30	40	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %									LL %	$\rho$ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>					
				ASPHALT OVER CONCRETE			0.00																					
				MADE GROUND (Dark brown becoming red brown very gravelly fine to coarse sand. Gravel of angular to subrounded fine to coarser brick, concrete, metal and flint)			0.13																		VOC = 0ppm			
				MADE GROUND (Dark brown and black gravelly medium and coarse sand. Gravel of angular to subrounded fine to coarse brick and concrete)			0.60																			VOC = 0ppm		
				MADE GROUND (Grey brown slightly gravelly fine to coarse sand. Gravel of angular to rounded fine and medium brick and flint)			0.90																			VOC = 0ppm		
				MADE GROUND (Grey brown silty fine to coarse sand with pockets of grey brown clay. Gravel of angular to subangular fine to coarse brick, concrete and flint)			1.10																			VOC = 0ppm		
				MADE GROUND (Multicoloured gravelly sandy clay. Gravel of angular to subrounded fine to coarse brick and flint)			1.20																			VOC = 1ppm (peak)		
				Soft dark grey and black mottled sandy CLAY with black clay pockets and weak to moderate natural organic odour			1.60																			VOC = 3ppm (peak)		
				Black and dark grey mottled sandy CLAY with moderate natural organic odour			2.00																			VOC = 2ppm (peak)		
				Dark grey silty CLAY with strong natural organic odour			2.50																					
				Soft grey CLAY with occasional fibrous material			3.50																					
																											VOC = 2ppm (peak)	
																												VOC = 2ppm (peak)
																												VOC = 2ppm (peak)

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_30/4/18

*WATER  Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows SPT blows for each 75mm increment
Water strikes		Response zone		B Bulk disturbed sample	C Cone penetration test	(35) Undisturbed sample blow count
		Lower seal		U Undisturbed sample	K Permeability test	N = SPT N value (blows after seating)
				P Piston sample		N*120 = Total blows/penetration including seating
				J Disturbed jar sample		<425 Sample % passing 425 micron sieve
				ES Environmental soil sample		
				W Water Sample		

DEPTH All depths, level and thicknesses in metres



PROJECT No 2543,GI	SHEET 1 OF 10	HOLE No. BHC10
-----------------------	------------------	-------------------



CLIENT: Suffolk County Council

PROJECT: Lake Lothing

GROUND LEVEL m

HOLE No. BHC10

LOGGED BY: LF  
FIELDWORK BY:  
TEMPLATE REF: GEL AGS BH BETA

CHECKED BY: SG  
DATE:

EXCAVATION METHOD: Cable Percussion (shell and auger)  
Uncased to 50.0 m

Coordinates: ,




SHEET 2 OF 10

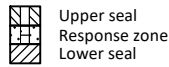
DATES 03/04/2018 -

PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes							
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m³	Cu kN/m²					
								0	10	20	30													40				
				Dark grey gravelly medium SAND with pockets of organic clay. Gravel of angular to subrounded fine and medium flint		5.60						6.00	6	C	B18 W11	4 4 5 6 6 7	24								VOC = 1ppm (peak)			
												6.50		ES	J11													
												7.00	7	C	B19	6 7 11 14 13 12	63*											
												8.00	8	ES	B20 J12	5 7 14 16 20	62*										VOC = 2ppm (peak)	
				Grey slightly gravelly clayey medium SAND. Gravel of angular to subrounded fine to coarse flint		8.80						9.00	9	S	B23	6 6	15										VOC = 1ppm (peak)	
												9.10		ES	J13	4 3 3 5												
				Dark grey and yellow brown mottled sandy CLAY with occasional fine gravel of flint		9.50						10.00	10															
												10.10		ES	B27 UT25 J14	(45)												VOC = 1ppm (peak)
				Dark orange brown and pale brown mottled medium SAND		10.20																						

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_30/4/18

\*WATER  Standing water level  PIEZOMETER  
 Water strikes



**SAMPLE AND TEST KEY**

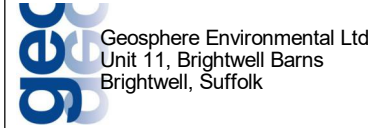
D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

**Upper seal**  
**Response zone**  
**Lower seal**

**S Standard penetration test**  
**C Cone penetration test**  
**K Permeability test**

**Blows** SPT blows for each 75mm increment (35) Undisturbed sample blow count  
**SPT N** N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



**PROJECT NO**  
2543,GI  
**SHEET**  
2 OF 10  
**HOLE No.**  
BHC10


<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC10</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 03/04/2018 -		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>	
				Dark orange brown and pale brown mottled medium SAND (continued)			0 10 20 30 40	11.00	11	S	B29	4 6 9 11 11 13	44								
				Brown coarse silty SAND.	X			11.50													
				Grey/brown slightly clayey medium SAND.	X			12.50													
				Grey sandy CLAY	X			12.90													
				Grey clayey medium and coarse SAND with occasional fine subangular gravel.	X			14.00													
				Grey slightly clayey fine SAND.	X			16.00													

GEL AGS BH BETA 2543,GI - LAKE LOTHING. 05-12-17 - AGS TEST 3.GPJ GINT STD AGS 3 1.GDT 30/4/18

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
	Water strikes		Response zone	B Bulk disturbed sample	C Cone penetration test	SPT N	(35) Undisturbed sample blow count	
			Lower seal	U Undisturbed sample	K Permeability test		N = SPT N value (blows after seating)	
				P Piston sample			N*120 = Total blows/penetration including seating	
				J Disturbed jar sample			<425 Sample % passing 425 micron sieve	
				ES Environmental soil sample				
				W Water Sample				

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No  
2543,GI  
SHEET  
3 OF 10  
HOLE No.  
BHC10

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC10</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 03/04/2018 -		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Grey slightly clayey fine SAND. (continued)																			
													17.00	S	B43	4 8 10 10 13 12	45						
													18.00		B46 UT44	(25)							
				Grey clayey fine SAND (laminated grey CLAY and silty fine SAND bands of up to 30mm thick)									19.00	S	B48	5 9 10 10 14 15	49						
													20.00		B50 UT49	(55)							
													21.00	S		4 5 10 16 20 3	58*						
				Grey clayey fine and medium SAND.									21.50		B53								
													22.00										

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_30/04/18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal


SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N  
SPT N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

SPT blows for each 75mm increment (35) Undisturbed sample blow count  
N\*120 = Total blows/penetration including seating  
Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No  
2543,GI  
SHEET  
4 OF 10  
HOLE No.  
BHC10


<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC10</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 03/04/2018 -		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>
							0	10	20	30	40											
				Grey clayey fine and medium SAND. (continued)								22.00	22	B56 UT54	(100)							
												23.00	23	S B58	5 8 9 8 9 14	40						
												24.00	24	B61 UT59								
												25.00	25	S B63	8 7 5 8 8 9	30						
				Grey silty slightly gravelly fine SAND. Gravel is fine shell fragments.		25.30																
												26.00	26	S B65	7 17 25 25	74*						
												27.00	27	S B67	13 13 8 9 10 11	38						

GEL AGS BH BETA 2543,GI - LAKE LOTHING. 05-12-17 - AGS TEST 3.GPJ GINT STD AGS 3.1.GDT 30/04/18

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
	Water strikes		Response zone	AND	B Bulk disturbed sample	C Cone penetration test		(35) Undisturbed sample blow count
			Lower seal	TEST	U Undisturbed sample	K Permeability test	SPT N	N = SPT N value (blows after seating)
				KEY	P Piston sample			N*120 = Total blows/penetration including seating
					J Disturbed jar sample			<425 Sample % passing 425 micron sieve
					ES Environmental soil sample			
					W Water Sample			

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No  
2543,GI  
SHEET  
5 OF 10  
HOLE No.  
BHC10

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC10</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 03/04/2018 -		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
					Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	
				Grey silty slightly gravelly fine SAND. Gravel is fine shell fragments. (continued)	X			28.00	28	S	B69	8 4 5 5 8 13	31								
					X			29.00	29	S	B71	9 9 15 20 15	68*								
					X			30.00	30	S	B73	7 7 12 18 20	64*								
					X			31.00	31	S	B75	6 18 25 25	74*								
				Grey SILT/CLAY	X		31.20														
				Grey silty fine/medium SAND	X		31.30														
					X			32.00	32	S	B77	12 13 22 25 3	75*								
				Grey silty CLAY	X		32.90														

GEL AGS BH BETA 2543,GI - LAKE LOTHING. 05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_30/4/18

\*WATER Standing water level PIEZOMETER Upper seal  
 Water strikes  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY

D	Small disturbed sample	S	Standard penetration test	Blows	SPT blows for each 75mm increment
B	Bulk disturbed sample	C	Cone penetration test	SPT N	(35) Undisturbed sample blow count
U	Undisturbed sample	K	Permeability test		N = SPT N value (blows after seating)
P	Piston sample				N*120 = Total blows/penetration including seating
J	Disturbed jar sample				<425 Sample % passing 425 micron sieve
ES	Environmental soil sample				
W	Water Sample				

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No	2543,GI
SHEET	6 OF 10
HOLE No.	BHC10


<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>				<b>HOLE No. BHC10</b>		
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m				Coordinates: ,		SHEET 7 OF 10	
TEMPLATE REF: GEL AGS BH BETA						DATES 03/04/2018 -				PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes						
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>				
								0	10	20	30	40																
				Grey silty CLAY (continued)	X							33.00	33	B80 UT78	(120)													
				Grey gravelly silty fine and medium SAND. Gravel is fine shell fragments.	X		33.40																					
					X							74	34	S B82	10 14 20 30	74*												
					X							75	35	S B84	12 13 31 19	75*												
					X							75	36	S B86	18 7 32 18	75*												
					X								37	S B88	25 50													
					X							75	38	S B90	21 4 50	75*												

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_30/4/18

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
∇	Water strikes		Response zone	AND	B Bulk disturbed sample	C Cone penetration test	(35)	Undisturbed sample blow count
			Lower seal	TEST	U Undisturbed sample	K Permeability test	SPT N	N = SPT N value (blows after seating)
				KEY	P Piston sample			N*120 = Total blows/penetration including seating
					J Disturbed jar sample			<425 Sample % passing 425 micron sieve
					ES Environmental soil sample			
					W Water Sample			

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

**PROJECT No**  
2543,GI  
**SHEET**  
7 OF 10  
**HOLE No.**  
BHC10

GEL AGS BH BETA 2543, GI - LAKE LOTHING. 05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_30/4/18

<b>CLIENT: Suffolk County Council</b>			<b>PROJECT: Lake Lothing</b>				<b>GROUND LEVEL m</b>				<b>HOLE No. BHC10</b>		
LOGGED BY: LF FIELDWORK BY: TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m				Coordinates: ,				SHEET 8 OF 10	
DATES 03/04/2018 -												PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata	Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes						
						Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %		WC %	PL %	LL %	ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
									0	10	20	30	40													
				Grey gravelly silty fine and medium SAND. Gravel is fine shell fragments. <i>(continued)</i>																						
					X							75														
					X						39.00	39	S	B92	21 4 47 3	75*										
					X																					
					X						40.00	40	S	B94	25 50											
					X																					
					X						41.00	41	S	B96	25 50											
					X																					
					X						42.00	42	S	B98	20 5 50	75*										
					X																					
					X						43.00	43	S	B100	25 45 5	75*										
					X																					

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
∇	Water strikes		Response zone	B Bulk disturbed sample	C Cone penetration test	SPT N	(35) Undisturbed sample blow count	
			Lower seal	U Undisturbed sample	K Permeability test		N = SPT N value (blows after seating)	
				P Piston sample			N*120 = Total blows/penetration including seating	
				J Disturbed jar sample			<425 Sample % passing 425 micron sieve	
				ES Environmental soil sample				
				W Water Sample				

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No  
2543, GI  
SHEET  
8 OF 10  
HOLE No.  
BHC10


<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC10</b>		
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m			Coordinates: ,			SHEET 9 OF 10
TEMPLATE REF: GEL AGS BH BETA					DATES 03/04/2018 -			PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0	10	20	30	40														
				Grey gravelly silty fine and medium SAND. Gravel is fine shell fragments. (continued)	X							44.00	44	S	B102	25 50									
					X							75													
					X							45.00	45	S	B104	25 41 9	75*								
				Grey slightly gravelly medium SAND. Gravel is fine shell fragments.	O		45.50																		
					O							46.00	46	S	B106	25 50									
					O							75													
					O							47.00	47	S	B108	25 40 10	75*								
					O																				
					O							48.00	48	S	B110	25 50									
					O																				
					O							49.00	49	S	B112	25 50									

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_30/4/18

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
∇	Water strikes		Response zone	AND	B Bulk disturbed sample	C Cone penetration test	(35)	Undisturbed sample blow count
			Lower seal	TEST	U Undisturbed sample	K Permeability test	SPT N	N = SPT N value (blows after seating)
				KEY	P Piston sample			N*120 = Total blows/penetration including seating
					J Disturbed jar sample			<425 Sample % passing 425 micron sieve
					ES Environmental soil sample			
					W Water Sample			

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No  
2543,GI  
SHEET  
9 OF 10  
HOLE No.  
BHC10



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC10</b>		
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m			Coordinates: ,			SHEET 10 OF 10
TEMPLATE REF: GEL AGS BH BETA					DATES 03/04/2018 -			PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
								0	10	20	30	40														
				Grey slightly gravelly medium SAND. Gravel is fine shell fragments. (continued)	o		50.00						50	s	25	50										
													51													
													52													
													53													
													54													
													55													

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_30/4/18

*WATER  Standing water level Water strikes	PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	SPT blows for each 75mm increment (35) Undisturbed sample blow count N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating Sample % passing 425 micron sieve	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk	PROJECT No 2543,GI SHEET 10 OF 10 HOLE No. BHC10
---	------------	---	---	---	---	---	---	---

DEPTH All depths, level and thicknesses in metres

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC14										
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 1 OF 8										
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 02-Jan-18 - 12-Jan-18				PROJECT NO. 2543,GI										
TEMPLATE REF: GEL AGS BH BETA																						
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata				Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	
								0	10	20	30	40										
				CONCRETE (pale grey with occasional 2mm rebar)			0.00							0								
				MADE GROUND (Dark brown and black very gravelly slightly clayey sand. Gravel is fine and medium subangular to subrounded brick and flint)			0.18							0.30	ES	J1					VOC = 0ppm	
				MADE GROUND (Brown medium and coarse sand with occasional medium subangular to subrounded flints)			0.60							0.70	ES	J2					VOC = 0ppm	
				MADE GROUND (Pale brown occasionally orange brown medium sand with occasional fine subrounded to subangular flint gravel)			1.00							1.00	B1						VOC = 0ppm	
				MADE GROUND (Pale brown orange brown and dark brown mottled slightly gravelly clay. Gravel of subangular fine to coarse flint, brick, charcoal and chalk)			1.60							1.80	ES	B2 J4					VOC = 0ppm	
				Orange brown slightly gravelly fine SAND. Gravel of subangular to rounded fine to coarse flint and quartz			2.90							2.90	S	B4					VOC = 0ppm	
														3.10	ES	J5	5 3 5 6 6 7	24			VOC = 0ppm	
														3.90	S	B6					VOC = 0ppm	
														4.10	ES	J6	4 2 2 2 2 3	9			VOC = 0ppm	
														4.90	S	B8					VOC = 0ppm	
														5.10	ES	J7	5 7 7 9 11 11	38			VOC = 0ppm	

\*WATER Standing water level  
 Water strikes  
 PIEZOMETER

Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve



PROJECT No. 2543,GI  
 SHEET 1 OF 8  
 HOLE No. BHC14

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

<b>CLIENT: Suffolk County Council</b> LOGGED BY: LF FIELDWORK BY: TEMPLATE REF: GEL AGS BH BETA		<b>PROJECT: Lake Lothing</b> CHECKED BY: SG DATE:		<b>EXCAVATION METHOD:</b> Cable Percussion (shell and auger) Uncased to 40.0 m			<b>GROUND LEVEL m</b> Coordinates: , DATES 02-Jan-18 - 12-Jan-18		<b>HOLE No. BHC14</b> SHEET 2 OF 8 PROJECT NO. 2543,G1	
--	--	---	--	---	--	--	--	--	--	--

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes					
								SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m³	Cu kN/m²			
								0	10	20	30	40															
				Orange brown slightly gravelly fine SAND. Gravel of subangular to rounded fine to coarse flint and quartz (continued)	○								5.80	B10											VOC = 0ppm		
				Orange brown very gravelly coarse SAND. Gravel of angular to subangular fine to coarse flint	○		6.60						6.10	S ES	J8	4 6 8 8 10 12	38									VOC = 0ppm	
				Pale orange brown slightly gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse flint	○		7.70						6.60	B12											VOC = 0ppm		
				8.40 Becoming pale brown with depth	○								6.80	ES	J9	3 7 9 12 9 8	38									VOC = 0ppm	
				9.90 Becoming dark brown with depth	○								7.70	B14												VOC = 0ppm	
					○								7.90	ES	J10	1 2 3 7 10 9	29										VOC = 0ppm
					○								8.60	ES	B16 J11											VOC = 0ppm	
					○								8.40	S		3 2 5 6 13 19	43									VOC = 0ppm	
					○								9.40	B18												VOC = 0ppm	
					○								9.60	ES	J12												VOC = 0ppm
					○								9.90	S	B19	4 6 6 8 10 11	35										
					○								10.60	B21													

<p>*WATER</p> <p>▽ Standing water level</p> <p>▽ Water strikes</p>	<p>PIEZOMETER</p> <p></p> <p>Upper seal</p> <p>Response zone</p> <p>Lower seal</p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count</p> <p>SPT N N = SPT N value (blows after seating)</p> <p>&lt;425 N*120 = Total blows/penetration including seating</p> <p>Sample % passing 425 micron sieve</p>		<p><b>PROJECT No.</b> 2543,G1</p> <p><b>SHEET</b> 2 OF 8</p> <p><b>HOLE No.</b> BHC14</p>
--	--	--	--	--	--	---

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA, 2543.GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC14</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 02-Jan-18 - 12-Jan-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes																					
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>																			
								0	10	20	30	40																														
				Pale orange brown slightly gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse flint (continued)									11	S	3 3 5 6 6 6	23																							Casing jammed at 10.90m, retracted 3 lengths of casing and redrilled from 8.0m depth			
													11.70	B23																												
													12	S	5 7 9 12 15 13	49																										
													12.70	B25																												
													13	S	6 11 14 16 20	67*																										
													13.70	B27																												
													14	S	3 4 6 6 11 17	40																										
													14.70	B29																												
													15	S	4 6 9 11 12 18	50*																										
													15.70	B31																												
													16	S	4 10 15 20 15 10	74*																										

*WATER  Standing water level Water strikes	PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	Geosphere Environmental		PROJECT No. 2543,GI	SHEET 3 OF 8	HOLE No. BHC14
---	------------	---	---	---	--	-------------------------	--	------------------------	-----------------	-------------------

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC14</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 02-Jan-18 - 12-Jan-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Pale orange brown slightly gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse flint (continued)	•••••							16.70		B33									
												17.00	S		3 8	7 11	14 16	48					
				Dark grey silty fine SAND	x x x x		17.60					17.60		B35									
												18.00	S		1 1	3 5	9 8	25					
												18.60		B38									
												19.00	S		12 17	25 25	79*						
												19.60		B40									
												20.00	S		7 12	18 22	10	69*					
												20.60		B42									
												21.00	S		7 7	11 14	14 18	57*					
												21.60		B44									
												22.00											

<p>*WATER  Standing water level</p> <p> Water strikes</p>	<p>PIEZOMETER </p>	<p> Upper seal</p> <p> Response zone</p> <p> Lower seal</p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT N</p> <p>SPT N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	<p>Geosphere Environmental</p>	<p>PROJECT No. 2543,GI</p> <p>SHEET 4 OF 8</p> <p>HOLE No. BHC14</p>
---	--------------------	---	--	--	---	--------------------------------	--

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543.GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC14										
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 5 OF 8										
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 02-Jan-18 - 12-Jan-18				PROJECT NO. 2543,GI										
TEMPLATE REF: GEL AGS BH BETA				Additional Tests and Notes																		
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>
				Dark grey sandy CLAY	X	22.10	0	10	20	30	40	22	S	6 10 12 14 11 13	50*							
											22.60		B46									
											23.00	23	UT47	(46)								
											23.60		B48									
				Dark grey slightly silty SAND		24.60					24	S	6 8 10 10 11 14	45								
											24.60		B50									
											25	S	12 19 29 21	81*							Blowing sands encountered at 25m depth. Borehole backfilled to 18m depth	
											25.70		B52									
											26	S	5 7 15 35	62*								
											26.70		B54									
				27.30 Occasional shell fragments with depth							27	S	15 16 22 28	81*								

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
SPT N N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

PROJECT No. 2543,GI

SHEET 5 OF 8

HOLE No. BHC14

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC14</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 02-Jan-18 - 12-Jan-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>
								0	10	20	30	40											
				Dark grey slightly silty SAND (continued)									27.60		B56								
													28.00	S		16 19 24 26	85*						
													28.50		B58								
													29.00	S		11 18 50	79*						
													29.60		B60								
													30.00	S		10 16 24 26	76*						
													30.60		B62								
													31.00	S		12 50							
													31.60		B64								
													32.00	S		13 34 50	97*						
													32.60		B66								
													33.00										

\*WATER Standing water level PIEZOMETER

Upper seal Response zone Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample S Standard penetration test Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample C Cone penetration test N = SPT N value (blows after seating)  
 U Undisturbed sample K Permeability test SPT N N\*120 = Total blows/penetration including seating  
 P Piston sample <425 Sample % passing 425 micron sieve  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

DEPTH All depths, level and thicknesses in metres

**PROJECT No.**  
2543,GI

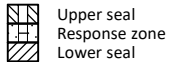
**SHEET**  
6 OF 8

**HOLE No.**  
BHC14

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

CLIENT: Suffolk County Council				PROJECT: Lake Lothing					GROUND LEVEL m					HOLE No. BHC14									
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)					Coordinates: ,					SHEET 7 OF 8									
FIELDWORK BY:		DATE:		Uncased to 40.0 m					DATES 02-Jan-18 - 12-Jan-18					PROJECT NO. 2543,GI									
TEMPLATE REF: GEL AGS BH BETA				Additional Tests and Notes																			
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing							
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Dark grey slightly silty SAND <i>(continued)</i>									33	S		20 27 50	97*						
				Dark grey slightly sandy CLAY		33.80							33.80		B68								
				Dark grey slightly silty gravelly fine and medium SAND. Gravel of white shell fragments		34.00							34.00	34	UT69	(57)							
													34.60		D70								
													35	S		31 50							
													35.60		B72								
													36	S		20 50							
													36.60		B74								
													37	S		26 50							
													37.60		B76								
													38	S		24 50							

\*WATER  $\nabla$  Standing water level  
 $\nabla$  Water strikes  
 PIEZOMETER



SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve



PROJECT No. 2543,GI  
 SHEET 7 OF 8  
 HOLE No. BHC14

DEPTH All depths, level and thicknesses in metres



GEL AGS BH BETA 2543.GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>				<b>HOLE No. BHC14</b>		
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m				Coordinates: ,		SHEET 8 OF 8	
TEMPLATE REF: GEL AGS BH BETA						DATES 02-Jan-18 - 12-Jan-18				PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %
							0	10	20	30	40											
				Dark grey slightly silty gravelly fine and medium SAND. Gravel of white shell fragments ( <i>continued</i> )	o							38.60		B78								
												39	S		19	50						
												39.60		B80								
							40.00					40	S		17	50						
												41										
												42										
												43										
												44										

Borehole completed at 40.0m depth. Backfilled with bentonite grout to 3.0m bgl.

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No.  
 2543,GI  
 SHEET  
 8 OF 8  
 HOLE No.  
 BHC14

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV)

CLIENT: Suffolk County Council				PROJECT: Lake Lothing										GROUND LEVEL m				HOLE No. BHC15						
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)										Coordinates: ,				SHEET 1 OF 8						
FIELDWORK BY:		DATE:		Uncased to 40.0 m										DATES 16-Jan-18 -				PROJECT NO. 2543,GI						
TEMPLATE REF: GEL AGS BH BETA																								
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
						Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
								0	10	20	30	40												
				MADE GROUND (Brown slightly gravelly clayey fine to coarse sand with rootlets. Gravel of angular to subrounded fine to coarse flint)		0.00							0											
				0.30 Becoming gravelly with depth									0.10	B1										VOC = 0ppm
				MADE GROUND (Dark brown and dark orange brown sand and gravel. Gravel of angular to subangular fine to coarse flint. Sand is fine to coarse)		0.40							0.25	ES	J1									
													0.30	B2										VOC = 0ppm
				MADE GROUND (Dark brown becoming black silty fine and medium sand)		0.70							0.50	ES	B3									
													0.60	J2										VOC = 0ppm
				1.00 Becoming gravelly with depth. Gravel of clinker, flint and ash									0.80	ES	B4									
													0.90	J3										VOC = 0ppm
				Orange brown gravelly fine and medium SAND. Gravel of angular to subangular fine to coarse flint		1.10							1.15	ES	J4	7 9	41							
														S		11 9								VOC = 0ppm
																11 10								VOC = 0ppm
				Brown becoming yellow brown fine and medium SAND with occasional angular fine to coarse flint gravel		2.00							1.70	ES	B6									
													1.80	J5										VOC = 0ppm
				Brown SAND and GRAVEL. Gravel of angular to subrounded fine to coarse flint. Sand is medium.		2.60								S		3 6	50*							
																10 12								VOC = 0ppm
																14 14								VOC = 0ppm
				Dark yellow brown medium SAND		3.00							2.60	ES	B8									
													2.70	J6										VOC = 0ppm
				3.60 Becoming slightly clayey with depth										S		3 5	43							
																7 9								VOC = 0ppm
																11 16								VOC = 0ppm
													3.60	ES	B10									
													3.70	J7										VOC = 0ppm
														S		3 7	44							
																9 8								VOC = 0ppm
																11 16								VOC = 0ppm
													4.60	ES	B12									
													4.70	J8										VOC = 0ppm
														S		3 7	60*							
																11 13								
																16 10								

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test Blows, SPT N (35) Undisturbed sample blow count, N = SPT N value (blows after seating), N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

C Cone penetration test, K Permeability test



PROJECT No  
2543,GI  
SHEET  
1 OF 8  
HOLE No.  
BHC15

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

CLIENT: Suffolk County Council			PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC15													
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 2 OF 8												
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 16-Jan-18 -				PROJECT NO. 2543,GI												
TEMPLATE REF: GEL AGS BH BETA																								
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0	10	20	30	40													
				Dark yellow brown medium SAND <i>(continued)</i>								5.60	ES	B14 J9									VOC = 0ppm	
												5.70												
												6	S		23	33	44	14						
				Dark yellow brown slightly gravelly medium and coarse SAND. Gravel of subangular to subrounded fine to coarse flint								6.60	ES	B16 J10									VOC = 0ppm	
												6.70												
												7	S		25	58	98	30						
												7.60	ES	B18 J11									VOC = 0ppm	
												7.70												
												8	S		25	79	111	38						
												8.60	ES	B20 J12									VOC = 0ppm	
												8.70												
												9	S		24	46	54	19						
												9.60	ES	B22 J13									VOC = 0ppm	
												9.70												
												9.80		B23										
				Yellow brown medium and coarse gravelly SAND								10	S		24	79	129	37						
												10.60	ES	B25 J14									VOC = 0ppm	
												10.70												
												11												

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
SPT N N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

**PROJECT No**  
2543,GI

**SHEET**  
2 OF 8

**HOLE No.**  
BHC15

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC15</b>		
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: ,			SHEET 3 OF 8
TEMPLATE REF: GEL AGS BH BETA					DATES 16-Jan-18 -			PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Yellow brown medium and coarse gravelly SAND <i>(continued)</i>	•••••							11	S	13 36 911	29								
												11.60	B27										
												60											
												12	S	46 1216 22	60*								
												12.60	B29										
												77											
												13	S	47 1021 296	77*								
				Orange brown silty fine SAND	•••••							13.50											
												13.60	B31										
												66											
												14	S	610 2129	66*								
												14.60	B33										
												64											
												15	S	59 1822 10	64*								
												15.60	B35										
												62											
												16	S	48 129 1019	62*								

<p>*WATER  Standing water level</p> <p> Water strikes</p>	<p>PIEZOMETER </p>	<p> Upper seal</p> <p> Response zone</p> <p> Lower seal</p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT N</p> <p>SPT N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	<p>Geosphere Environmental</p>	<p>PROJECT No 2543,GI</p> <p>SHEET 3 OF 8</p> <p>HOLE No. BHC15</p>
---	--------------------	---	--	--	---	--------------------------------	---

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

CLIENT: Suffolk County Council			PROJECT: Lake Lothing				GROUND LEVEL m					HOLE No. BHC15											
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,					SHEET 4 OF 8										
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 16-Jan-18 -					PROJECT NO. 2543,GI										
TEMPLATE REF: GEL AGS BH BETA		Additional Tests and Notes																					
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Orange brown silty fine SAND (continued)									16.60		B37								
													17.00	S		6 11 20 22 8	67*						
													17.60		B39								
				Dark grey slightly clayey fine SAND						18.20			18.00	S		9 22 21 19 10	81*						
				Dark grey silty fine SAND						18.60			18.60		B41								
													18.80	S		10 14 13 20 17	74*						
													19.20		B43								
													19.60	S									
													20.00	S		11 19 24 26	80*						
													20.40		B45								
													20.80	S									
													21.20	S		18 23 30 20	91*						
													21.60		B47								
													22.00										

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

SPT blows for each 75mm increment (35) Undisturbed sample blow count



PROJECT No  
2543,GI  
 SHEET  
4 OF 8  
 HOLE No.  
BHC15

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC15														
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 5 OF 8														
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 16-Jan-18 -				PROJECT NO. 2543,GI														
TEMPLATE REF: GEL AGS BH BETA												Additional Tests and Notes														
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes						
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
				Dark grey silty fine SAND (continued)	X		0	10	20	30	40	58	22	S		4 4 9 13 28	58*									
				Dark grey CLAY									22.40													
													22.60	B49												
													23													
													23.60	D51												
													24													
				Dark grey coarse SAND with occasional shell fragments									24.40													
													24.60	B53												
													25	S		6 10 10 10 15 14	49									
													25.60	B55												
													26	S		7 9 13 16 21	66*									
													26.60	B57												
													27	S		16 29 50	95*									

\*WATER Standing water level  
 Water strikes

PIEZOMETER Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N  
SPT N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
Sample % passing 425 micron sieve



PROJECT No  
2543,GI  
SHEET  
5 OF 8  
HOLE No.  
BHC15

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

<b>CLIENT: Suffolk County Council</b>				<b>PROJECT: Lake Lothing</b>					<b>GROUND LEVEL m</b>					<b>HOLE No. BHC15</b>														
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)					Coordinates: ,					SHEET 6 OF 8														
FIELDWORK BY:		DATE:		Uncased to 40.0 m					DATES 16-Jan-18 -					PROJECT NO. 2543,GI														
TEMPLATE REF: GEL AGS BH BETA				Additional Tests and Notes																								
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes							
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>				
				Dark grey coarse SAND with occasional shell fragments (continued) 27.60 Sand becoming fine in grain size with depth	•••••		0	10	20	30	40	27.60		B59														
												28	S		22	28												
												28.60		B61														
												29	S		15	50												
												29.60		B63														
												30	S		25	50												
												30.60		B65														
												31	S		19	6	26	24	75*									
												31.60		B67														
												32	S		25	38	12	75*										
												32.60		B69														
												33																

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test Blows  
 C Cone penetration test SPT N  
 K Permeability test

SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



**PROJECT No**  
2543,GI

**SHEET**  
6 OF 8

**HOLE No.**  
BHC15

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC15														
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 7 OF 8														
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 16-Jan-18 -				PROJECT NO. 2543,GI														
TEMPLATE REF: GEL AGS BH BETA		Additional Tests and Notes																								
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing										
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>			
				Dark grey coarse SAND with occasional shell fragments (continued)			0	10	20	30	40	75														
													33	S	19 6 35 15	75*										
													33.60	B71												
													34	S	18 7 27 23	75*										
													34.60	B73												
													35	S	25 50											
													35.60	B75												
													36	S	16 9 45 5	75*										
													36.60	B77												
													37	S	25 50											
													37.60	B79												
													38	S	22 3 50	75*										

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 Sample % passing 425 micron sieve



PROJECT No  
2543,GI  
SHEET  
7 OF 8  
HOLE No.  
BHC15

DEPTH All depths, level and thicknesses in metres



GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV)

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC15													
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 8 OF 8													
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 16-Jan-18 -				PROJECT NO. 2543,GI													
TEMPLATE REF: GEL AGS BH BETA																									
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes						
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
							0	10	20	30	40														
				Dark grey coarse SAND with occasional shell fragments <i>(continued)</i>										38.60	B81										
														39	S	15 10 32 18	75*								
														39.60	B83										
														40.00	S	11 14 21 19 10	75*								Borehole completed at 40.0m depth. Backfilled with bentonite grout.

\*WATER Standing water level PIEZOMETER

Water strikes

Upper seal	Response zone	Lower seal
------------	---------------	------------

<b>SAMPLE AND TEST KEY</b>	D Small disturbed sample	S Standard penetration test	Blows SPT blows for each 75mm increment
	B Bulk disturbed sample	C Cone penetration test	(35) Undisturbed sample blow count
	U Undisturbed sample	K Permeability test	N = SPT N value (blows after seating)
	P Piston sample		N*120 = Total blows/penetration including seating
	J Disturbed jar sample		<425 Sample % passing 425 micron sieve
	ES Environmental soil sample		
	W Water Sample		

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental

**PROJECT No**  
2543,GI

**SHEET**  
8 OF 8

**HOLE No.**  
BHC15

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC17											
LOGGED BY: JG		CHECKED BY: LF		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 1 OF 8											
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 23-Jan-18 - 31-Jan-18				PROJECT NO. 2543,GI											
TEMPLATE REF: GEL AGS BH BETA												Additional Tests and Notes											
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing							
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
								0 10 20 30 40															
				TOPSOIL (Dark brown silty slightly gravelly fine sand with rootlets. Gravel of subangular to subrounded fine and medium flint)			0.00				0												
				MADE GROUND (Dark brown and black gravelly fine to coarse sand. Gravel of subangular fine and medium asphalt and brick)			0.40				0.20	ES	B1									VOC = 12ppm (peak). Slight natural organic odour	
				MADE GROUND (Brown slightly gravelly fine and medium sand with occasional gravel of fine flint and brick fragments)			0.50				0.40	ES	B2									VOC = 23ppm (peak)	
				Light brown and yellow brown fine and medium SAND with occasional fine and medium flint gravel			0.75				0.60	ES	B3									VOC = 2ppm (peak)	
				Brown and light grey mottled sandy CLAY with occasional fine flint and chalk gravel			1.00				1.00	1	ES	B4								VOC = 6ppm (peak)	
							1.20					1.20	S	B6	11	22	23	9					
				Yellow brown medium SAND with occasional fine flint gravel			1.70				1.60	ES	J5									VOC = 8ppm (peak)	
							1.80					1.80	D7										
							2.00					2.00	2	UT8	(42)								
							2.50					2.50	ES	J6									VOC = 163ppm (peak). Strong natural organic odour
				Yellow brown medium SAND with occasional fine flint gravel			2.60				2.60	D9											
							2.80					2.80	D10										
				Yellow brown medium SAND with occasional fine flint gravel			3.00				3.00	3	S	B12	23	34	67	20					
							3.50					3.50	ES	J7									Moderate inflow of water at 3.5m
				Yellow brown medium SAND with occasional fine flint gravel			3.60				3.60	W13											VOC = 0ppm
							4.00					4.00	4	S	B16	12	23	47	16				
				Yellow brown medium SAND with occasional fine flint gravel			4.50				4.50	ES	J8										VOC = 0ppm
							5.00					5.00	5	S	B19	23	24	56	17				
				Yellow brown medium SAND with occasional fine flint gravel			5.30				5.30	ES	J9									VOC = 0ppm	

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

Geosphere Environmental

PROJECT No  
2543,GI  
SHEET  
1 OF 8  
HOLE No.  
BHC17

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC17											
LOGGED BY: JG		CHECKED BY: LF		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 2 OF 8											
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 23-Jan-18 - 31-Jan-18				PROJECT NO. 2543,GI											
TEMPLATE REF: GEL AGS BH BETA																							
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
				Yellow brown medium SAND with occasional fine flint gravel (continued)			0 10 20 30 40																
										6.00	6	C	B20	11 22 23	9								VOC = 0ppm
										6.30		ES	J10										
										7.00	7	S	B22	44 56 78	26								VOC = 0ppm
										7.30		ES	J11										
				Yellow brown gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint						8.00	8	S	B24	35 66 66	24								VOC = 0ppm
										8.30		ES	J12										
										9.00	9	S	B25	12 12 22	7								VOC = 0ppm
										9.30		ES	J13										
				Grey brown very gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint and occasional coarse subrounded flint						10.00	10	S	B27	34 43 33	13								VOC = 0ppm
										10.30		ES	J14										

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N

SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

**PROJECT No**  
2543,GI

**SHEET**  
2 OF 8

**HOLE No.**  
BHC17

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC17															
LOGGED BY: JG		CHECKED BY: LF		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 3 OF 8															
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 23-Jan-18 - 31-Jan-18				PROJECT NO. 2543,GI															
TEMPLATE REF: GEL AGS BH BETA		Additional Tests and Notes																									
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing												
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>					
				Grey brown very gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint and occasional coarse subrounded flint (continued)			0	10	20	30	40	11.00	11	C	B28	3 4 4 3 4 5	16										
												12.00	12	C	B29	4 4 4 4 6 6	20										
												13.00	13	C	B30	2 3 3 4 5 7	19										
				Grey brown slightly silty fine SAND with occasional rounded fine flint								14.00	14	C	B31	3 3 4 7 8 9	28										
												15.00	15	C	B32	6 8 7 9 9 13	38										
												16.00	16	S	B34	3 3 5 7 7 10	29										


\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental

PROJECT No	2543,GI
SHEET	3 OF 8
HOLE No.	BHC17

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC17</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 23-Jan-18 - 31-Jan-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>			
							0	10	20	30	40																
				Grey brown slightly silty fine SAND with occasional rounded fine flint (continued)																							
												17.00	17	S	B36	3 7 7 10 16 17	50*										
				Grey fissured CLAY			18.50																				
				Grey silty fine SAND			19.20																				
												19.00	19	UT39	(150)												
												20.00	20	S	B40	6 8 8 10 14 18	50*										
												21.00	21	S	B42	10 14 14 17 19	74*										
				Grey fissured CLAY			21.60																				

<p>*WATER  Standing water level</p> <p> Water strikes</p>	<p>PIEZOMETER </p>	<p>Upper seal </p> <p>Response zone </p> <p>Lower seal </p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT N</p> <p>SPT N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	<p>SPT blows for each 75mm increment (35) Undisturbed sample blow count</p>	<p>Geosphere Environmental</p>	<p>PROJECT No 2543,GI</p> <p>SHEET 4 OF 8</p> <p>HOLE No. BHC17</p>
---	--------------------	---	--	--	---	---	--------------------------------	---

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC17												
LOGGED BY: JG		CHECKED BY: LF		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 5 OF 8												
FIELDWORK BY:		DATE:		Uncased to 40.0 m				DATES 23-Jan-18 - 31-Jan-18				PROJECT NO. 2543,GI												
TEMPLATE REF: GEL AGS BH BETA		Additional Tests and Notes																						
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing								
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0	10	20	30	40													
				Grey fissured CLAY (continued)								22.00	22	U46	(40)									
												22.60		D47										
												23.00	23	S B49	7 10 12 14 16 8	67*								
												24.00	24	UT50	(50)									
												24.60		D51										
				Grey silty fine SAND with occasional shell fragments								25.00	25	S B53	6 8 10 12 15 13	64*								
												26.00	26	S B55	10 9 7 7 5 6	44								
												27.00	27	S B57	7 13 14 15 17 4	70*								

\*WATER Standing water level  
 Water strikes  
 PIEZOMETER

Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve



PROJECT No  
2543,GI  
 SHEET  
5 OF 8  
 HOLE No.  
BHC17

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC17</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 23-Jan-18 - 31-Jan-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes									
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>							
								0	10	20	30	40																			
				Grey silty fine SAND with occasional shell fragments <i>(continued)</i>	X																										
					X									73	28.00	S	B59	5 18 40 10	73*												
					X									75	29.00	S	B61	12 13 15 15 20	75*												
					X									67	30.00	S	B63	5 12 30 20	67*												
					X									75	31.00	S	B65	5 20 25 25	75*												
					X									69	32.00	S	B67	7 12 23 27	69*												
				Grey silty gravelly fine SAND. Gravel of shell fragments and calcareous gravel	O		32.80							64																	

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test Blows, C Cone penetration test, K Permeability test

SPT N = SPT blows for each 75mm increment (35) Undisturbed sample blow count, N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

**PROJECT No**  
2543,GI

**SHEET**  
6 OF 8

**HOLE No.**  
BHC17

GEL AGS BH BETA 2543, GI - LAKE LOTHING\_05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENV

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC17</b>		
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: ,			SHEET 7 OF 8
TEMPLATE REF: GEL AGS BH BETA					DATES 23-Jan-18 - 31-Jan-18			PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes							
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>				
								0	10	20	30	40	64															
				Grey silty gravelly fine SAND. Gravel of shell fragments and calcareous gravel (continued)	○									33.00	33	S	B69	4 10 15 21 14	64*									
					○									34.00	34	S	D71	10 15 32 18	75*									
					○									35.00	35	S	B73	12 13 18 27 5	75*									
				36.00 Becoming slightly gravelly with depth	○									36.00	36	S	B75	25 42 8	75*									
					○									37.00	37	S	B77	7 17 25 25	74*									
					○									38.00	38	S	B79	15 10 28 22	75*									

*WATER  Standing water level Water strikes	PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	SPT blows for each 75mm increment (35) Undisturbed sample blow count N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating Sample % passing 425 micron sieve		PROJECT No <b>2543,GI</b> SHEET <b>7 OF 8</b> HOLE No. <b>BHC17</b>
---	------------	---	---	---	---	---	--	--

DEPTH All depths, level and thicknesses in metres



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>				<b>HOLE No. BHC17</b>			
LOGGED BY: JG FIELDWORK BY: TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: LF DATE:			EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m				Coordinates: ,		SHEET 8 OF 8	
									DATES 23-Jan-18 - 31-Jan-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes							
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>				
					0	10	20	30	40																			
				Grey silty gravelly fine SAND. Gravel of shell fragments and calcareous gravel <i>(continued)</i>	○								75															
												39.00	S	B81	25 35 15	75*												
							40.00					75	S		25 32 18	75*												

Borehole completed at 40.0m depth. Backfilled with bentonite grout.

*WATER ↓ Standing water level	PIEZOMETER	Upper seal	SAMPLE	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
↓ Water strikes		Response zone	AND TEST KEY	B Bulk disturbed sample	C Cone penetration test	N = SPT N value (blows after seating)	(35) Undisturbed sample blow count
		Lower seal		U Undisturbed sample	K Permeability test	N*120 = Total blows/penetration including seating	
				P Piston sample		<425	Sample % passing 425 micron sieve
				J Disturbed jar sample			
				ES Environmental soil sample			
				W Water Sample			

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC18</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 29-Jan-18 - 16-Feb-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
						Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>	
								0	10	20	30	40													
				TOPSOIL (Brown silty slightly clayey fine SAND with rootlets and occasional gravel of subangular to subrounded flints)		0.00							0												VOC = 0ppm
				MADE GROUND (Dark brown silty gravelly SAND. Gravel is fine and medium subangular to subrounded flints)		0.30							0.10	ES	J1										VOC = 1ppm
													0.30	ES	J2										VOC = 1ppm
													0.70	ES	J3										VOC = 1ppm
				Orange brown / brown slightly gravelly medium fine SAND. Gravel is fine and medium subangular to subrounded flints		1.00							0.90	B1											VOC = 0ppm
													1.10	ES	J4										VOC = 0ppm
													1.10	S		12	35	55	18						VOC = 0ppm
				Brown very gravelly coarse SAND. Gravel of subangular to subrounded fine to coarse flint		1.70							1.70	ES	B3										VOC = 0ppm
													1.70	J5											VOC = 0ppm
													2.70	S		37	916	178	50*						VOC = 0ppm
													2.70	ES	B5										VOC = 0ppm
													2.70	J6											VOC = 0ppm
				Grey brown slightly silty slightly gravelly fine to coarse SAND. Gravel of subangular to subrounded fine flint		3.50							3.70	ES	B7										VOC = 0ppm
													3.70	J7											VOC = 0ppm
													4.70	S		23	57	75	24						VOC = 0ppm
													4.70	ES	B9										VOC = 0ppm
													4.70	J8											VOC = 0ppm
													6.00	S		37	911	1416	60*						VOC = 0ppm

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test, C Cone penetration test, K Permeability test

Blows SPT N = SPT N value (blows after seating), N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

Geosphere Environmental

PROJECT No. 2543,GI  
SHEET 1 OF 8  
HOLE No. BHC18

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)\_GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC18</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 29-Jan-18 - 16-Feb-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>		
				Light orange brown slightly gravelly medium and coarse SAND. Gravel of subangular to subrounded fine to coarse flint			0	10	20	30	40	5.70	ES	B11 J9									VOC = 0ppm	
													6	S		24 46 79	26							VOC = 0ppm
													6.70	ES	B13 J10									VOC = 0ppm
													7	S		33 67 111	35							VOC = 0ppm
													7.70	ES	B15 J11									VOC = 0ppm
													8	S		33 44 57	20							VOC = 0ppm
													8.70	ES	B17 J12									VOC = 0ppm
													9	S		46 1015 2015	70*							VOC = 0ppm
													9.70	ES	B19 J13									VOC = 0ppm
													10.00	ES	J14	69 1520 232	75*							VOC = 0ppm
													10.70		B21									VOC = 0ppm

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
2 OF 8  
HOLE No.  
BHC18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC18</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 29-Jan-18 - 16-Feb-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	
				Brown gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint		11.00	0 10 20 30 40	11.00	11	S	B23	3 5 5 5 6 6	22								
				Brown SAND and GRAVEL. Gravel of subangular to subrounded fine and medium flint. Sand is medium and coarse.		12.50		12.00	12	C	B24	2 8 9 8 9 9	35								
				Orange brown SAND and GRAVEL. Gravel of subangular medium and coarse flint. Sand is medium.		13.80		13.00	13	C	B25	2 1 2 5 7 7	21								
				14.60 Becoming slightly cobbly with depth				14.00	14	C	B26	4 3 5 7 10 12	34								
								14.60			B27										
								15.00	15	S	B29	4 8 9 13 13 13	48								
								16.00	16	S	B31	3 7 10 15 22 5	62*								

GEL AGS BH BETA 2543,GI - LAKE LOTHING. 05-12-17 (USE THIS ONE),GPJ\_GINT STD AGS 3\_1.GDT. 26-2-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
3 OF 8  
HOLE No.  
BHC18

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC18**  
 LOGGED BY: JG      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: ,      SHEET 4 OF 8  
 FIELDWORK BY:      DATE:      Uncased to 40.0 m      DATES 29-Jan-18 - 16-Feb-18      PROJECT NO. 2543,GI  
 TEMPLATE REF: GEL AGS BH BETA

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m³	Cu kN/m²	
								0	10	20	30	40												
				Orange brown SAND and GRAVEL. Gravel of subangular medium and coarse flint. Sand is medium. (continued)								69	17	S		10 9 12 13 10 15	69*							
				Dark grey fissured CLAY		17.80						17.80	17.80	B33										
				Dark grey silty fine SAND with occasional clay pockets		18.80						18.80	18.80	B36		8 11 18 22 10	69*							
				Dark grey silty fine SAND		19.70						19.70	19.70	B38		9 14 31 19	73*							
												20.70	20.70	B40										
												21.70	21.70	B42		10 15 50	75*							
												68	22											

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER Standing water level      PIEZOMETER Upper seal      SAMPLE AND TEST KEY      D Small disturbed sample      S Standard penetration test      Blows      SPT blows for each 75mm increment (35) Undisturbed sample blow count      N = SPT N value (blows after seating)      N\*120 = Total blows/penetration including seating      <425      Sample % passing 425 micron sieve

Water strikes      Response zone      U Undisturbed sample      C Cone penetration test      SPT N      ES Environmental soil sample      W Water Sample

DEPTH All depths, level and thicknesses in metres



**PROJECT No**  
2543,GI  
**SHEET**  
4 OF 8  
**HOLE No.**  
BHC18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC18</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 29-Jan-18 - 16-Feb-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
							0	10	20	30	40	68														
				Dark grey silty fine SAND (continued)										22	S	6 12 22 28	68*									
														22.80	B44											
														23.00	UT45	(40)										
				Dark grey CLAY		23.70								23.60 23.70	D46 B47											
														24.00	UT48	(32)										
														24.60	D49											
														25.00	UT50	(51)										
				Dark grey silty fine SAND with occasional shell fragments 25.50 Sand becoming fine and medium with depth		25.30								25.70	B51											
														26	S	16 9 19 21 10	75*									
														26.70	B53											
														27	S	22 3 24 26	75*									

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE),GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
5 OF 8  
HOLE No.  
BHC18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC18</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 29-Jan-18 - 16-Feb-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
								0	10	20	30	40												
				Dark grey silty fine SAND with occasional shell fragments (continued)	X									27.70	B55									
					X									28.00	S	8 15 16 21 13	73*							
					X									28.70	B57									
					X									29.00	S	11 14 23 27	75*							
					X									29.70	B59									
					X									30.00	S	16 9 32 18	75*							
					X									30.70	B61									
					X									31.00	S	22 3 25 25	75*							
					X									31.70	B63									
					X									32.00	S	20 5 32 15	72*							
					X									32.70	B65									
					X									33.00										

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

SPT blows for each 75mm increment (35) Undisturbed sample blow count

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
6 OF 8  
HOLE No.  
BHC18

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC18														
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m				Coordinates: ,				SHEET 7 OF 8														
TEMPLATE REF: GEL AGS BH BETA								DATES 29-Jan-18 - 16-Feb-18				PROJECT NO. 2543,GI														
Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata			Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
								0	10	20	30	40	75													
				Dark grey silty fine SAND with occasional shell fragments (continued)	X									33	S	14 11 36 14	75*									
														33.70	B67											
														34	S	21 4 50	75*									
				Dark grey slightly silty fine SAND with shell fragments	.									34.40												
														34.70	B69											
														35	S	6 11 13 19 18	67*									
														35.70	B71											
														36	S	8 15 21 29	73*									
														36.70	B73											
														37	S	20 5 50	75*									
														37.70	B75											
														38	S	20 5 50	75*									

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
7 OF 8  
HOLE No.  
BHC18



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>			<b>HOLE No. BHC18</b>			
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: ,			
TEMPLATE REF: GEL AGS BH BETA					DATES 29-Jan-18 - 16-Feb-18			PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
								0	10	20	30	40											
				Dark grey slightly silty fine SAND with shell fragments (continued)										38.70	B77								
														39.70	S	7 13 20 30	70*						
														39.70	B79								
						40.00								40.00	S	25 34 15	74*						
														41									
														42									
														43									
														44									

Borehole completed at 40m bgl. Borehole backfilled with bentonite grout.

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE),GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY

D	Small disturbed sample	S	Standard penetration test	Blows	SPT blows for each 75mm increment
B	Bulk disturbed sample	C	Cone penetration test	(35)	Undisturbed sample blow count
U	Undisturbed sample	K	Permeability test	N = SPT N value (blows after seating)	
P	Piston sample			N*120 = Total blows/penetration including seating	
J	Disturbed jar sample			<425	Sample % passing 425 micron sieve
ES	Environmental soil sample				
W	Water Sample				

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
8 OF 8  
HOLE No.  
BHC18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC19</b>		
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: ,			SHEET 1 OF 8
TEMPLATE REF: GEL AGS BH BETA					DATES 05-Feb-18 - 16-Feb-18			PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>
						0	10	20	30	40													
				TOPSOIL (Brown gravelly slightly silty medium sand with rootlets. Gravel of subangular to rounded flint and chalk)		0.00					0												
				MADE GROUND (Dark brown gravelly fine and medium sand. Gravel of angular to subrounded flint and chalk)	⊗	0.40					0.20 0.30	ES	J1									VOC = 7ppm (peak)	
				Light brown slightly gravelly medium and coarse SAND. Gravel of subangular to subrounded fine flint  1.20 Becoming gravelly with depth		0.80					0.50 0.60	ES	J2									VOC = 4ppm (peak)	
							0.90 1.10					1	B3 ES	J3									VOC = 10ppm (peak)
				Grey brown gravelly silty medium SAND with occasional clay pockets. Gravel of subangular to rounded fine and medium flint	⊗	1.70					1.70 1.80	C ES	B4 J4	11 33 33	12							VOC = 35ppm (peak) 5ppm (steady). No odour.	
				Light brown gravelly medium and coarse SAND. Gravel of subangular to subrounded medium and coarse flint		2.20					2.20 2.30	S ES	B6 J5	44 44 55	18								VOC = 3ppm (peak)
							3.00					3	ES C	B7 J6	34 22 32	9							VOC = 33ppm (peak). No odour.
				Orange brown gravelly silty medium SAND. Gravel of angular to subrounded fine to coarse flint		4.00					4.00	ES C	B8 J7	22 34 77	21								VOC = 0ppm
							5.00					5	ES C	B9 J8	23 45 67	22							VOC = 0ppm

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER Standing water level PIEZOMETER  
 Water strikes

DEPTH All depths, level and thicknesses in metres

Upper seal  
 Response zone  
 Lower seal

**SAMPLE AND TEST KEY**  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

**S** Standard penetration test  
**C** Cone penetration test  
**K** Permeability test

**Blows** SPT blows for each 75mm increment (35) Undisturbed sample blow count  
**SPT N** N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve



PROJECT No  
2543,GI  
SHEET  
1 OF 8  
HOLE No.  
BHC19

<b>CLIENT: Suffolk County Council</b>	<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>	<b>HOLE No. BHC19</b>
LOGGED BY: JG FIELDWORK BY:	CHECKED BY: LF DATE:	EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m	Coordinates: ,	SHEET 2 OF 8
TEMPLATE REF: GEL AGS BH BETA			<b>DATES 05-Feb-18 - 16-Feb-18</b>	<b>PROJECT NO. 2543,G1</b>

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes					
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m³	Cu kN/m²			
								0	10	20	30	40														
				Orange brown gravelly silty medium SAND. Gravel of angular to subrounded fine to coarse flint <i>(continued)</i>	o																					
				Orange brown silty fine and medium SAND with occasional fine subangular flint gravel	x		6.00						6.00	6	ES C	B10 J9	23 45 55								VOC = 0ppm	
					x																					
				Brown gravelly medium SAND with thin bands of grey brown sandy clay. Gravel of fine and medium flint with occasional coarse flint	o		8.00						8.00	8	ES C	B12 J11	23 34 55									VOC = 0ppm
				Brown gravelly medium SAND. Gravel of subangular fine and medium flint	o		9.00						9.00	9	ES C	B13 J12	23 34 57									VOC = 0ppm
					o								10.00	10	ES C	B14 J13	34 55 56									VOC = 0ppm
														11												

GEL AGS BH BETA 2543,G1 - LAKE LOTHING\_05-12-17 (USE THIS ONE),GPJ\_GINT STD AGS 3\_1,GDT\_26-2-18

*WATER	▼ Standing water level	PIEZOMETER	☐ Upper seal	SAMPLE	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
▽	Water strikes		☐ Response zone	AND	B Bulk disturbed sample	C Cone penetration test		(35) Undisturbed sample blow count
			☐ Lower seal	TEST	U Undisturbed sample	K Permeability test	SPT N	N = SPT N value (blows after seating)
				KEY	P Piston sample			N*120 = Total blows/penetration
					J Disturbed jar sample			including seating
					ES Environmental soil sample			Sample % passing 425 micron sieve
					W Water Sample			

DEPTH All depths, level and thicknesses in metres



PROJECT NO  
2543,G1  
SHEET  
2 OF 8  
HOLE No.  
BHC19

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC19</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 05-Feb-18 - 16-Feb-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation		Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
				Brown SAND and GRAVEL. Gravel of subangular to rounded fine to coarse flint. Sand is fine and medium.	b		11.00	0 10 20 30 40	11.00	11	C	B15	2 4 5 6 6 7	24							
				Grey brown sandy gravelly CLAY. Gravel of subrounded to rounded medium flint. Sand is medium	c		12.80		12.00	12	C	B16	6 7 6 10 11 13	40							
				Orange brown sandy slightly cobbly GRAVEL. Gravel of subangular to rounded fine to coarse flint. Cobbles of flint	d		13.30		12.90 13.00	13	S	D17 B19	5 5 5 9 8 8	30							
				Brown silty slightly gravelly fine SAND. Gravel of subangular fine and medium flint	e		14.50		14.00	14	C	B20	3 4 6 10 16 16	48							
					f				15.00	15	C	B21	4 5 7 11 12 17	47							
					g				16.00	16	C	B22	2 3 8 10 13 15	46							

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test, C Cone penetration test, K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count, SPT N N = SPT N value (blows after seating), N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

**PROJECT No**  
2543,GI

**SHEET**  
3 OF 8

**HOLE No.**  
BHC19

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC19**  
 LOGGED BY: JG      CHECKED BY: LF      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: ,  
 FIELDWORK BY:      DATE:      Uncased to 40.0 m      DATES 05-Feb-18 - 16-Feb-18      SHEET 4 OF 8  
 TEMPLATE REF: GEL AGS BH BETA      PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>
							0	10	20	30	40											
				Brown silty slightly gravelly fine SAND. Gravel of subangular fine and medium flint (continued)	X																	
				Grey brown silty fine SAND	.		16.80					16.80	D23									
					.							17.10	S B25	4 5 6 9 9 10		34						
					.							18.00	C B26	2 4 6 8 8 10		32						
					.							19.00	S B28	4 8 10 15 16 9		62*						
					.							20.00	S B30	4 10 14 18 18		64*						
					.							21.00	S B32	4 8 16 20 14		62*						
					.							22.00										

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**

D	Small disturbed sample	S	Standard penetration test	Blows	SPT blows for each 75mm increment
B	Bulk disturbed sample	C	Cone penetration test	(35) Undisturbed sample blow count	
U	Undisturbed sample	K	Permeability test	SPT N	N = SPT N value (blows after seating)
P	Piston sample				N*120 = Total blows/penetration including seating
J	Disturbed jar sample				<425 Sample % passing 425 micron sieve
ES	Environmental soil sample				
W	Water Sample				

DEPTH All depths, level and thicknesses in metres



**PROJECT No**  
2543,GI



**SHEET**  
4 OF 8





**HOLE No.**  
BHC19

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC19</b>	
LOGGED BY: JG		CHECKED BY: LF		EXCAVATION METHOD: Cable Percussion (shell and auger)		Coordinates: ,	
FIELDWORK BY:		DATE:		Uncased to 40.0 m		DATES 05-Feb-18 - 16-Feb-18	
TEMPLATE REF: GEL AGS BH BETA		PROJECT NO. 2543,GI					

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes							
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>					
				Grey brown silty fine SAND (continued)				0	10	20	30	40	22.00	22	S	B34	8 7 8 8 9 11	36										
													23.00	23			B37 UT35	(68)										
													23.60			D36												
													24.00	24	S	B39	2 8 7 8 8 9	32										
				24.80 Becoming slightly gravelly with depth. Gravel of fine shell fragments									25.00	25	S	B41	2 7 11 12 13 14	59*										
				Grey slightly silty fine SAND with occasional fine shells									26.00	26	S	B43	25 14 16 20	75*										
													27.00	27	C	B44	19 6 21 29	75*										

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER  Standing water level  Water strikes

PIEZOMETER  Upper seal  Response zone  Lower seal 

SAMPLE AND TEST KEY

D	Small disturbed sample	S	Standard penetration test	Blows	SPT blows for each 75mm increment
B	Bulk disturbed sample	C	Cone penetration test	(35)	Undisturbed sample blow count
U	Undisturbed sample	K	Permeability test	N = SPT N value (blows after seating)	
P	Piston sample			N*120 = Total blows/penetration including seating	
J	Disturbed jar sample			<425	Sample % passing 425 micron sieve
ES	Environmental soil sample				
W	Water Sample				

DEPTH All depths, level and thicknesses in metres



**PROJECT No**  
2543,GI

**SHEET**  
5 OF 8

**HOLE No.**  
BHC19

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC19</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 05-Feb-18 - 16-Feb-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes						
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>			
								0	10	20	30	40															
				Grey slightly silty fine SAND with occasional fine shells <i>(continued)</i>																							
													75	28.00	28	S	B46	25 32 18	75*								
														29.00	29	C	B48	25 50									
													70	30.00	30	S	B50	8 12 14 20 16	70*								
													73	31.00	31	S	B52	6 17 18 29 3	73*								
													75	32.00	32	S	B54	10 15 31 19	75*								
													75		33												

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
6 OF 8  
HOLE No.  
BHC19

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC19</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 05-Feb-18 - 16-Feb-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
								0	10	20	30	40	75													
				Grey slightly silty fine SAND with occasional fine shells <i>(continued)</i>									33.00	33	S	B56	12 13 30 20	75*								
													75													
													34.00	34	S	B58	10 15 20 30	75*								
													73													
													35.00	35	S	B60	9 14 24 26	73*								
													71													
				36.00 Becoming slightly gravelly with depth. Gravel of fine shell fragments									36.00	36	S	B62	9 12 17 30 3	71*								
													75													
													37.00	37	S	B64	12 13 35 15	75*								
													75													
													38.00	38	S	B66	12 13 31 19	75*								

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
7 OF 8  
HOLE No.  
BHC19



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>					<b>HOLE No. BHC19</b>		
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m					Coordinates: ,		SHEET 8 OF 8
TEMPLATE REF: GEL AGS BH BETA		DATES 05-Feb-18 - 16-Feb-18								PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes							
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>					
					0 10 20 30 40																							
				Grey slightly silty fine SAND with occasional fine shells <i>(continued)</i>	. . . . . .																							
										39.00		S	B68	16 9 36 14	75*													
								40.00				S	B70	6 18 19 28 3	74*													

Borehole completed at 40m bgl. Backfilled with bentonite grout.

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE),GPJ\_GINT STD AGS 3\_1.GDT\_26-2-18

*WATER  Standing water level Water strikes	PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT blows for each 75mm increment (35) Undisturbed sample blow count N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	 Geosphere Environmental	PROJECT No 2543,GI SHEET 8 OF 8 HOLE No. BHC19
DEPTH All depths, level and thicknesses in metres							



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC20</b>	
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
				DATES 14/02/2018 - 08/03/2018		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes														
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>													
								0	10	20	30	40																							
				Light brown silty fine SAND with occasional fine gravel of flint (continued)	X								5.70	ES B14 J8																		VOC = 0ppm			
					X								6	S		5 7 9 11 15 15		62*																	
					X								6.60	ES J9 B16																			VOC = 0ppm		
					X								6.70	S																					
					X								7	S		2 4 4 4 9 10		27																	
					X								7.70	ES B18 J10																				VOC = 0ppm	
					X								8	S		2 4 6 6 7 11		30																	
				Grey brown silty fine sand with occasional fine gravel of flint and small pockets of grey clay	X					8.60			8.60	ES B20 J11																				VOC = 0ppm	
					X								9	S		2 3 4 6 6 9		25																	
					X								9.60	ES J12 B22																					VOC = 0ppm
					X								9.70	S																					
					X								10	S		3 7 11 13 13 13		60*																	
					X								10.60	ES B24 J13																					VOC = 0ppm

\*WATER Standing water level Water strikes

PIEZOMETER

Upper seal Response zone Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample

S Standard penetration test Blows SPT N

C Cone penetration test

K Permeability test

SPT N = SPT N value (blows after seating) N\*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No. 2543,GI  
SHEET 2 OF 8  
HOLE No. BHC20

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC20</b>	
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
				DATES 14/02/2018 - 08/03/2018		SHEET 3 OF 8 PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>	
				Grey brown silty fine sand with occasional fine gravel of flint and small pockets of grey clay (continued)	X			0 10 20 30 40		11	S	2 2 3 3 4 8	18									
				Grey to light brown silty CLAY.	X		11.60			11.70	B26											
				Light grey slightly gravelly coarse SAND. Gravel is fine and medium rounded to subangular flints.	O		12.50			12.60	B28											
					O					12.60												
					O					13	S	3 5 9 13 18 10	58*									
					O					13.70	B30											
					O					14	S	2 7 15 25 10	59*									
					O					14.60	B32											
					O					15	S	6 11 18 22 10	67*									
					O					15.70	B34											
					O					16	S	8 12 21 29	70*									

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test Blows, SPT N (35) Undisturbed sample blow count, N = SPT N value (blows after seating), N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

C Cone penetration test, K Permeability test

Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No. 2543,GI  
SHEET 3 OF 8  
HOLE No. BHC20

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC20</b>	
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
				DATES 14/02/2018 - 08/03/2018		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>	
								0	10	20	30	40											
				Light grey slightly gravelly coarse SAND. Gravel is fine and medium rounded to subangular flints. (continued)	○								16.70	B36									
													17	S	4 5 4 6 6 7	23							
				Dark grey slightly silty/clayey fine SAND.	×		17.50						17.60	B38									
													18	S	3 5 5 7 6 7	25							
				Dark grey fine slightly silty SAND, with occasional shell fragments.	×		18.60						18.70	B40									
													19	S	19 6 22 28	75*							
													19.70	B42									
													20	S	21 4 20 25 5	75*							
													20.70	B44									
													21	S	12 13 26 24	75*							
													21.70	B46									
													22										

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal


SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N  
SPT N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

SPT blows for each 75mm increment (35) Undisturbed sample blow count  
N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No  
2543,GI  
SHEET  
4 OF 8  
HOLE No.  
BHC20

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC20**  
 LOGGED BY: LF      CHECKED BY:      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: ,  
 FIELDWORK BY: GEL      DATE:      Uncased to 40.0 m      DATES 14/02/2018 - 08/03/2018      SHEET 5 OF 8  
 TEMPLATE REF: GEL AGS BH BETA      PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40	75												
				Dark grey fine slightly silty SAND, with occasional shell fragments. (continued)	X								22	S	16 9 22 28	75*								
				Dark grey CLAY			22.50						22.60	B48										
				Dark grey coarse slightly shelly SAND.			23.40						23.00	UT49										
													23.80	B51	15 10 21 27 2	75*								
													24.60	B53										
													25.70	B55	21 4 24 26	75*								
													26.70	B57	20 5 20 23 4	72*								
													27	S	19 6 27 23	75*								

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample    C Cone penetration test    (35) Undisturbed sample blow count  
 U Undisturbed sample    K Permeability test    SPT N N = SPT N value (blows after seating)  
 P Piston sample    N\*120 = Total blows/penetration including seating  
 J Disturbed jar sample    <425 Sample % passing 425 micron sieve  
 ES Environmental soil sample    W Water Sample

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

**PROJECT No**  
2543,GI  
**SHEET**  
5 OF 8  
**HOLE No.**  
BHC20

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC20</b>	
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: ,	
				DATES 14/02/2018 - 08/03/2018		SHEET 6 OF 8 PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
								0	10	20	30	40													
				Dark grey coarse slightly shelly SAND. (continued)										27.70	B59										
														71	S	22 3	22 24	71*							
														28.70	B61										
														75	S	16 9	50	75*							
														29.70	B63										
														75	S	22 3	39 11	75*							
				Dark grey silty fine SAND with shelly fragments.		30.50								30.70	B65										
														75	S	25 42	8	75*							
														31.70	B67										
														75	S	17 8	31 19	75*							
														32.70	B69										
														75											

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N  
SPT N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No. 2543,GI  
SHEET 6 OF 8  
HOLE No. BHC20

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC20</b>		
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: ,			SHEET 7 OF 8
							DATES 14/02/2018 - 08/03/2018			PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
								0	10	20	30	40	75													
				Dark grey silty fine SAND with shelly fragments. (continued)	X									33	S	18 7 24 26	75*									
					X									33.70	B71											
					X									34	S	22 3 28 22	75*									
					X									34.70	B73											
					X									35	S	15 10 31 19	75*									
					X									35.70	B75											
					X									36	S	17 8 25 25	75*									
					X									36.70	B77											
					X									37	S	22 3 27 23	75*									
					X									37.70	B79											
					X									38	S	25 50										

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18


\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test Blows  
 C Cone penetration test SPT N  
 K Permeability test

SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No  
2543,GI  
 SHEET  
7 OF 8  
 HOLE No.  
BHC20



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC20</b>		
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: ,			SHEET 8 OF 8
							DATES 14/02/2018 - 08/03/2018			PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40													
				Dark grey silty fine SAND with shelly fragments. (continued)	X									38.70	B81									
					X									39	S	18 7	32 18	75*						
					X									39.70	B83									
					X									40	S	12 13	22 28	75*						
					X									41										
					X									42										
					X									43										
					X									44										

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18


\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No  
2543,GI  
 SHEET  
8 OF 8  
 HOLE No.  
BHC20

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC22</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 25.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 16/01/2018 - 22/01/2018		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>	
								0	10	20	30	40										
				FLEXIBLE SURFACING		0.00							0									
				MADE GROUND (Brown gravelly sand. Gravel of fine and medium brick, flint and flexible surfacing fragments)		0.15							0.20	ES	B1							VOC = 53ppm (peak)
													0.50	ES	B2							VOC = 98ppm (peak)
													1.10	ES	B4	12		12				VOC = 6ppm (peak)
				Orange brown slightly clayey fine and medium SAND with occasional fine and medium flint gravel									1.20	S	J3	23						
													1.70			34						
				Orange brown clayey fine SAND									2.00	ES	J4	(17)						VOC = 2ppm (peak)
													2.60		UT5							
													3.00	ES	D6							
													3.00	S	B8	00		4				VOC = 1ppm (peak)
													3.00	S	J5	11						
													3.00	S	J5	11						
													4.00	ES	B10	11		11				VOC = 0ppm
													4.00	S	J6	22						
													4.00	S	J6	34						
				Brown silty SAND with occasional thin bands of grey clay		4.50							5.00	ES	B12	11		6				VOC = 0ppm
													5.00	S	J7	11						
				5.00 Becoming grey brown with depth									5.00	S	J7	22						
													6.00	ES	B14	23		29				VOC = 0ppm
													6.00	S	J8	67						
													6.00	S	J8	88						
													7.00	ES	B15	11		7				VOC = 0ppm
													7.00	C	J9	21						
													7.00	C	J9	22						
													8.00	ES	B16	11		6				VOC = 0ppm
													8.00	C	J10	11						
													8.00	C	J10	22						
				Grey brown silty SAND with occasional fine to medium flint gravel		9.00							9.00	ES	B18	23		26				VOC = 0ppm
													9.00	S	J11	47						
													9.00	S	J11	78						

\*WATER Standing water level  
 Standing water level  
 Water strikes

PIEZOMETER  
 Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No. 2543,GI  
 SHEET 1 OF 3  
 HOLE No. BHC22

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC22</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 25.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 16/01/2018 - 22/01/2018		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
						Reduced Level	Depth	0	10	20	30	40	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
				Grey brown silty SAND with occasional fine to medium flint gravel (continued)	X							10.00	ES	B20	2 2	8									VOC = 0ppm
				Firm grey sandy CLAY	X		10.70					10.80	D22												
				Brown coarse SAND	X		11.00					11.00	B24												
				Grey and brown mottled slightly clayey medium SAND	X		13.00					13.00	S	B28	8 12 13 12 12 14	51*									
				Grey slightly clayey fine SAND	X		15.10					15.00	S	B32	3 4 6 6 7 7	26									
				Grey silty fine SAND with occasional pockets of grey clay	X		18.50					18.00	S	B39	5 6 8 7 10 10	35									
					X							17.00		B37	(40)										
					X							17.70	D36												
					X							18.00	S	B39	5 6 8 7 10 10	35									
					X							19.00	S		10 20 25 20 5	80*									


GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve



Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No  
 2543,GI  
 SHEET  
 2 OF 3  
 HOLE No.  
 BHC22

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>			<b>HOLE No. BHC22</b>	
LOGGED BY: JG FIELDWORK BY: TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 25.0 m			Coordinates: ,	
				DATES 16/01/2018 - 22/01/2018			PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
								0	10	20	30	40													
				Grey silty fine SAND with occasional pockets of grey clay (continued)	X									20											
					X									21											
					X									22											
					X									23											
					X									24											
					X									25											
					X									26											
					X									27											
					X									28											
					X									29											
					X									30											

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No. 2543,GI  
 SHEET 3 OF 3  
 HOLE No. BHC22

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC23</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 26-Feb-18 - 27-Feb-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>	
								0	10	20	30	40											
				TOPSOIL (Dark brown silty fine and medium sand with occasional flint gravel)			0.00						0										VOC = 0ppm
				MADE GROUND (Dark brown gravelly fine to coarse sand with occasional pockets of orange brown and black sand and occasional cobbles of concrete. Gravel of angular to subrounded fine to coarse flint, concrete and occasional brick)	XXXX		0.60						0.30	ES	B1 J1								VOC = 1ppm (peak)
				Orange brown fine and medium SAND with occasional rounded flint	.....		1.20						0.70	ES	B2 J2								
				Orange brown slightly clayey fine and medium SAND with occasional pale grey mottling and bands of clay 2.20 Bands of clay becoming more frequent with depth	.....		2.00					1.20	D3										
							1.40					1.40	C	B4	12								VOC = 2ppm (peak)
							1.50					1.50	ES	J3	22	9							
							2.00					2.00	2	S	B6	12	11						VOC = 1ppm (peak)
							2.30					2.30	ES	J4	23								
							3.00					3.00	3	S	B8	11	17						VOC = 2ppm (peak)
							3.30					3.30	ES	J5	33								
							4.00					4.00	4	S	B10	67	72*						VOC = 1ppm (peak)
							4.30					4.30	ES	J6	914								
							5.00					5.00	5	S	B12	12	44						VOC = 1ppm (peak)
							5.30					5.30	ES	J7	910								
															1213								

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test, C Cone penetration test, K Permeability test

Blows SPT N = SPT N value (blows after seating), N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental

PROJECT No. 2543,GI  
SHEET 1 OF 3  
HOLE No. BHC23

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT 5-3-18

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT 5-3-18

<b>CLIENT: Suffolk County Council</b>			<b>PROJECT: Lake Lothing</b>				<b>GROUND LEVEL m</b>				<b>HOLE No. BHC23</b>					
LOGGED BY: LF FIELDWORK BY:			CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.0 m				Coordinates: ,				SHEET 2 OF 3			
TEMPLATE REF: GEL AGS BH BETA							DATES 26-Feb-18 - 27-Feb-18				PROJECT NO. 2543,GI					

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes							
						Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m³		Cu kN/m²						
				Orange brown silty fine and medium SAND with occasional fine flint gravel ( <i>continued</i> )	X																									
				Yellow brown silty fine and medium SAND	.		6.00		7.1			6.00	6	C	B13	8 13 12 15 16 7	71*											VOC = 0ppm		
					.							6.30	ES	J8														VOC = 0ppm		
					.																								VOC = 0ppm	
					.							7.00	7	S	B15	2 4 6 6 9 11	32												VOC = 0ppm	
					.							7.30	ES	J9															VOC = 0ppm	
					.																								VOC = 0ppm	
					.							8.00	8	S	B17	1 0 1 4 5 8	18													VOC = 0ppm
					.							8.30	ES	J10															VOC = 0ppm	
					.																								VOC = 0ppm	
					.							9.00	9	S	B19	2 2 5 7 10 13	35													VOC = 0ppm
					.							9.30	ES	J11															VOC = 0ppm	
				9.80 - 10.20 Band of grey clay	.																								VOC = 1ppm (peak)	
					.							9.90	10	S	D20 B22	2 6 8 14 13 12	47												VOC = 1ppm (peak)	
					.							10.00																	VOC = 1ppm (peak)	
					.							10.50	ES	J12															VOC = 1ppm (peak)	

\*WATER Standing water level Water strikes  
 PIEZOMETER  
 SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample  
 S Standard penetration test, C Cone penetration test, K Permeability test  
 Blows SPT N  
 SPT blows for each 75mm increment (35) Undisturbed sample blow count N = SPT N value (blows after seating) N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

 Geosphere Environmental  
**PROJECT No**  
**2543,GI**  
**SHEET**  
**2 OF 3**  
**HOLE No.**  
**BHC23**

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC23**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: ,  
 FIELDWORK BY:      DATE:      Uncased to 15.0 m      DATES 26-Feb-18 - 27-Feb-18      SHEET 3 OF 3  
 TEMPLATE REF: GEL AGS BH BETA      PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	
				Yellow brown silty fine and medium SAND (continued) 11.00 Becoming grey brown with depth			0 10 20 30 40	11.00	11	S	B24	13 6 7 8 9	30								
				Yellow brown silty medium and coarse SAND with occasional dark orange brown sand pockets and rounded flint		12.00		12.00	12	S	B26	3 6 7 11 12 14	44								
				Grey CLAY		12.60		12.80			D27										
				Grey brown silty fine and medium SAND		13.00		13.00	13	S	B29	3 7 12 12 15 11	60*								
								14.00	14	S	B31	5 6 7 11 12 14	44								
						15.00			15	S		2 2 4 7 9 11	31								

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 (USE THIS ONE)/GPJ\_GINT STD AGS 3\_1.GDT 5-3-18

\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**

D	Small disturbed sample	S	Standard penetration test	Blows	SPT blows for each 75mm increment
B	Bulk disturbed sample	C	Cone penetration test	SPT N	(35) Undisturbed sample blow count
U	Undisturbed sample	K	Permeability test		N = SPT N value (blows after seating)
P	Piston sample				N*120 = Total blows/penetration including seating
J	Disturbed jar sample				<425 Sample % passing 425 micron sieve
ES	Environmental soil sample				
W	Water Sample				

DEPTH All depths, level and thicknesses in metres



**PROJECT No**  
2543,GI  
**SHEET**  
3 OF 3  
**HOLE No.**  
BHC23

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC24														
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA				CHECKED BY: DATE:				EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.0 m				Coordinates: , DATES 14/02/2018 - 23/02/2018				SHEET 1 OF 3 PROJECT NO. 2543,GI										
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata					Graphical Representation					Sampling/In-Situ Testing					Laboratory Testing					Additional Tests and Notes
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>				
								0	10	20	30	40														
				CONCRETE (Pale grey, no rebar)		0.00							0													
				MADE GROUND (Intact bricks and cobbles of brick)		0.15							0.25	ES	J1											
				MADE GROUND (Orange brown and dark orange brown silty gravelly fine to coarse sand with occasional pockets of black / dark brown silty sand 0.35 Becoming grey brown in colour with depth)		0.23							0.45	ES	J2											
													0.50	B	1											
													0.60	B	1											
				MADE GROUND (Black silty slightly gravelly fine and medium sand with moderate natural organic odour. Gravel of angular to subrounded fine and medium flint and clinker)		0.70							1.00	1	ES	J3							VOC = 1ppm (peak)			
													1.50	B	4								VOC = 0ppm			
													ES	J4												
				Grey brown silty slightly gravelly fine and medium SAND with weak natural organic odour to 2.5m. Gravel of subangular to rounded fine flint.		1.90							2	B	6								VOC = 2ppm (peak)			
													ES	J5												
													2.10	B	8								VOC = 2ppm (peak)			
													ES	J6												
													2.50	B	10								VOC = 1ppm (peak)			
													ES	J7												
													3													
													3.50	B	12								VOC = 5ppm (peak)			
													ES	J8												
													4													
													4.50	B	8											
													ES	J8												
													5													

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 -AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N  
Blows SPT N for each 75mm increment  
(35) Undisturbed sample blow count  
N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
Unit 11, Brightwell Barns  
Brightwell, Suffolk

PROJECT No  
2543,GI  
SHEET  
1 OF 3  
HOLE No.  
BHC24

DEPTH All depths, level and thicknesses in metres



GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC24</b>		
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.0 m			Coordinates: ,			SHEET 2 OF 3
							DATES 14/02/2018 - 23/02/2018			PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>
							0	10	20	30	40												
				Light grey brown silty fine SAND	X	5.50						5.50	B	14									VOC = 3ppm (peak)
					X							6											
					X							6.50	B	16									VOC = 1ppm (peak)
					X							7											
					X							7.50	B	18									VOC = 2ppm (peak)
					X							8											
				Light brown fret slightly silty slightly gravelly medium SAND.	X	8.10																	
					X							8.50	B	20									VOC = 2ppm (peak) / CO = 4ppm (peak)
					X							9											
					X							9.50	B	22									VOC = 1ppm (peak)
					X							10	ES	J14									
					X							10.50	B	24									VOC = 1ppm (peak) / CO = 4ppm (peak)
					X							11											

<p>*WATER  Standing water level</p> <p> Water strikes</p>	<p>PIEZOMETER </p>	<p>Upper seal </p> <p>Response zone </p> <p>Lower seal </p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT blows for each 75mm increment</p> <p>SPT N (35) Undisturbed sample blow count</p> <p>N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	<p>Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk</p>	<p>PROJECT No 2543,GI</p> <p>SHEET 2 OF 3</p> <p>HOLE No. BHC24</p>
---	--------------------	---	--	--	---	--	---

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC24</b>		
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.0 m			Coordinates: ,			SHEET 3 OF 3
							DATES 14/02/2018 - 23/02/2018			PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
								SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>	
0	10	20	30	40																					
				Light brown fret slightly silty slightly gravelly medium SAND. (continued)	X		11.30						11												
				Brown slightly gravelly medium SAND. Gravel is fine subangular flints.	O								11.50	B	26										
				Grey silty CLAY	X		12.10						12												
				Grey silty fine SAND.	X		12.30						12.50	B	29										
				Brown grey silty SAND with occasional fine subangular flint gravel.	X		13.00						13												
					X								13.50	B	31										
					X								14												
				Grey silty fine SAND.	X		14.50						14.50	B	33										
					X		15.00						15												
					X								16												

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST 3.GPJ\_GINT STD AGS 3\_1.GDT\_26/4/18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal


SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental Ltd  
 Unit 11, Brightwell Barns  
 Brightwell, Suffolk

PROJECT No  
2543,GI  
 SHEET  
3 OF 3  
 HOLE No.  
BHC24

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC26										
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.0 m				Coordinates: ,				SHEET 1 OF 3										
TEMPLATE REF: GEL AGS BH BETA								DATES 05-Mar-18 - 06-Mar-18				PROJECT NO. 2543,GI										
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing				Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40				Depths	Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>
				MADE GROUND (Dark brown gravelly silty fine to coarse sand. Gravel is angular to subrounded fine to coarse flint, brick, clinker and charcoal)		0.00					0											
				MADE GROUND (Dark brown and orange brown fine to coarse sand with occasional subrounded flint and occasional black sand pockets)		0.70					0.30 0.40	ES J1									VOC = 0ppm	
				Dark yellow brown slightly silty / clayey fine to coarse SAND with occasional fine flint		1.30					0.70 0.80	ES J2									VOC = 0ppm	
				2.50 Becoming gravelly with depth		1.30					1.30	S B4	2 2 4 6	22								VOC = 0ppm
						1.50					1.50	ES J3	6 6									VOC = 0ppm
						2.00					2.00	ES S J4	2 4 4 5 6 6	21								VOC = 0ppm
						2.80					2.80	DS7										
						3.00					3.00	ES C B8 J5	2 2 3 4 5	14								VOC = 0ppm
						4.00					4.00	ES C B9 J6	1 1 2 2 4 4	12								VOC = 0ppm
						5.00					5.00	ES C B10 J7	1 2 4 4 3 4	15								VOC = 0ppm

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 (USE THIS ONE) GPJ GINT STD AGS 3 1.GDT 8-3-18

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal  
 Response zone  
 Lower seal  
**SAMPLE AND TEST KEY**  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test  
**Blows** SPT blows for each 75mm increment (35) Undisturbed sample blow count  
**SPT N** N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve



PROJECT No.  
 2543,GI  
 SHEET  
 1 OF 3  
 HOLE No.  
 BHC26

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC26</b>	
LOGGED BY: JG FIELDWORK BY: TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.0 m		Coordinates: ,	
				DATES 05-Mar-18 - 06-Mar-18		PROJECT NO. 2543,G1	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation		Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
				Dark yellow brown slightly silty / clayey fine to coarse SAND with occasional fine flint (continued)				0 10 20 30 40												
								6.00	6	ES C	B11 J8	1 1 3 2 3 3	11							VOC = 0ppm
								7.00	7	ES C	B12 J9	2 3 3 3 4 3	13							VOC = 0ppm
				8.00 - 9.50 Becoming dark orange brown				8.00	8	ES C	B13 J10	2 3 4 4 6 7	21							VOC = 0ppm
								9.00	9	ES C	B14 J11	1 4 4 5 4 8	21							VOC = 0ppm
								10.00	10	ES C	B15 J12	2 4 7 10 11 13	41							VOC = 0ppm

GEL AGS BH BETA 2543,G1 - LAKE LOTHING, 05-12-17 (USE THIS ONE)\GPJ\_GINT STD AGS 3 1.GDT 8-3-18

\*WATER Standing water level PIEZOMETER

Upper seal Response zone Lower seal

**SAMPLE AND TEST KEY**

D	Small disturbed sample	S	Standard penetration test
B	Bulk disturbed sample	C	Cone penetration test
U	Undisturbed sample	K	Permeability test
P	Piston sample		
J	Disturbed jar sample		
ES	Environmental soil sample		
W	Water Sample		

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental  
**PROJECT No. 2543,G1**  
**SHEET 2 OF 3**  
**HOLE No. BHC26**

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC26</b>	
LOGGED BY: JG FIELDWORK BY:		CHECKED BY: LF DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 15.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 05-Mar-18 - 06-Mar-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>			
							0	10	20	30	40															
				Dark yellow brown slightly silty / clayey fine to coarse SAND with occasional fine flint (continued)								11.00	C	B16	3 6 9 9 10 12	40										
				Grey brown fine and medium SAND with occasional fine flint gravel								12.00	C	B17	4 9 10 10 13 14	47										
												13.00	C	B18	2 4 7 7 12 10	36										
												14.00	S	B20	4 5 9 9 11 12	41										
				14.80 Becoming slightly silty/clayey with depth								14.80		B21												
												15.00	S		2 2 5 6 6 7	24										

Borehole completed at 15m bgl. Borehole backfilled with bentonite grout

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 (USE THIS ONE) GPJ GINT STD AGS 3 1.GDT 8-3-18

*WATER	Standing water level	PIEZOMETER		Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count	
	Water strikes			Response zone		B Bulk disturbed sample	C Cone penetration test	N = SPT N value (blows after seating)	
				Lower seal		U Undisturbed sample	K Permeability test	N*120 = Total blows/penetration including seating	
						P Piston sample		<425 Sample % passing 425 micron sieve	
						J Disturbed jar sample			
						ES Environmental soil sample			
						W Water Sample			

DEPTH All depths, level and thicknesses in metres




PROJECT No. 2543,GI	SHEET 3 OF 3	HOLE No. BHC26
---------------------	--------------	----------------

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC27</b>	
LOGGED BY: LF FIELDWORK BY: TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
				DATES 02-Jan-18 - 15-Jan-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				FLEXIBLE SURFACING		0.00						0											
				MADE GROUND (Grey brown and red brown gravelly fine to coarse sand. Gravel of fine and medium angular to subrounded brick and occasional rebar)		0.20						0.20	ES	J1									
												0.60	ES	J2									
				CONCRETE (Pale grey, no rebar)		0.90																	
				MADE GROUND (Brown sandy clay. Sand is fine to coarse)		1.50						1.50		B1IP									
												1.60	ES	J3									
				MADE GROUND (Brown sand and gravel. Gravel of angular to subrounded fine to coarse flint. Sand is fine to coarse)		2.00						2.00											
				MADE GROUND (Brown clayey gravelly fine to coarse sand. Gravel of angular to subrounded fine to coarse brick, flint and clinker)		2.10						2.10	C	B1	11		10						VOC = 0ppm
				Grey brown slightly clayey sandy GRAVEL. Gravel of subangular to subrounded fine and medium flint		3.00						3.00	S	B3	22		8						VOC = 0ppm
												3.20	ES	J5	22								
				Grey sandy GRAVEL. Gravel of subangular to subrounded fine to coarse flint		4.00						4.00	C	B4	56		26						VOC = 0ppm
												4.20	ES	J6	76								
				Grey brown silty fine and medium SAND		5.00						5.00	C	B5	34		28						VOC = 0ppm
												5.20	ES	J7	67								

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment (35) Undisturbed sample blow count
	Water strikes		Response zone	U Undisturbed sample	B Bulk disturbed sample	C Cone penetration test	SPT N	N = SPT N value (blows after seating)
			Lower seal	P Piston sample	U Undisturbed sample	K Permeability test		N*120 = Total blows/penetration including seating
				J Disturbed jar sample				<425 Sample % passing 425 micron sieve
				ES Environmental soil sample				
				W Water Sample				


**Geosphere Environmental**  
 PROJECT No. 2543,GI  
 SHEET 1 OF 10  
 HOLE No. BHC27

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>			<b>HOLE No. BHC27</b>
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m			SHEET 2 OF 10
TEMPLATE REF: GEL AGS BH BETA				DATES 02-Jan-18 - 15-Jan-18			PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	
				Grey brown silty fine and medium SAND <i>(continued)</i>				0 10 20 30 40	6.00	6	S	B7	23 33	18							VOC = 0ppm
									6.20		ES	J8	57								
									7.00	7	S	B9	55 57	26							VOC = 0ppm
									7.10		ES	J9	77								
									8.00	8	C	B10	23 45	26							VOC = 0ppm
									8.10		ES	J10	89								
									9.00	9	C	B11	34 55	22							VOC = 0ppm
									9.10		ES	J11	57								
									10.00	10	S	B13	32 33	14							VOC = 0ppm
				Yellow brown slightly silty gravelly SAND. Gravel of angular to subrounded fine to coarse flint					10.10		ES	J12	44								

<p>*WATER</p> <p>▼ Standing water level</p> <p>▽ Water strikes</p>	<p>PIEZOMETER</p> <p>Upper seal</p> <p>Response zone</p> <p>Lower seal</p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>DEPTH All depths, level and thicknesses in metres</p>	<p>SAMPLE AND TEST KEY</p> <p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT N</p> <p>SPT N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	<p>SPT blows for each 75mm increment (35) Undisturbed sample blow count</p>	<p>Geosphere Environmental</p>	<p><b>PROJECT No.</b> 2543,GI</p> <p><b>SHEET</b> 2 OF 10</p> <p><b>HOLE No.</b> BHC27</p>
--	--	--	--	---	---	---	--------------------------------	--

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC27</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 02-Jan-18 - 15-Jan-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation		Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>		
				Yellow brown slightly silty gravelly SAND. Gravel of angular to subrounded fine to coarse flint ( <i>continued</i> )	D			0 10 20 30 40	11.00	11	S	B14	23 46 78	25								
				Yellow brown and grey sandy CLAY	D				13.60													
				Dark yellow brown medium SAND with occasional fine to medium flint gravel and occasional bands of sandy clay	D				14.10													
				Dark grey silty fine and medium SAND with occasional pale brown mottling	D				16.00													

<p>*WATER  Standing water level</p> <p> Water strikes</p>	<p>PIEZOMETER </p>	<p>Upper seal </p> <p>Response zone </p> <p>Lower seal </p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count</p> <p>SPT N N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	Geosphere Environmental	<p>PROJECT No. 2543,GI</p> <p>SHEET 3 OF 10</p> <p>HOLE No. BHC27</p>
---	--------------------	---	--	--	--	-------------------------	---

DEPTH All depths, level and thicknesses in metres



GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

<b>CLIENT: Suffolk County Council</b>				<b>PROJECT: Lake Lothing</b>				<b>GROUND LEVEL m</b>				<b>HOLE No. BHC27</b>									
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 4 OF 10									
FIELDWORK BY:		DATE:		Uncased to 50.0 m				DATES 02-Jan-18 - 15-Jan-18				PROJECT NO. 2543,GI									
TEMPLATE REF: GEL AGS BH BETA		Additional Tests and Notes																			
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
				Dark grey silty fine and medium SAND with occasional pale brown mottling (continued)	X		0 10 20 30 40														
										17.00	17	S	B26	4 5 7 9 10 12	38						
										18.00	18	S	B28	2 4 6 8 12 14	40						
										19.00	19	S	B30	3 10 18 24 8	63*						
										20.00	20	S	B32	7 8 12 13 15 10	65*						
				Dark yellow brown medium and coarse SAND						20.30											
				Dark grey silty medium SAND	X					20.40											
										21.00	21	S	B34	7 10 10 8 10 12	40						
				Dark grey sandy CLAY						21.60											
										22											

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal  
 Response zone  
 Lower seal

**SAMPLE AND TEST KEY**  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
SPT N N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

**PROJECT No.**  
2543,GI

**SHEET**  
4 OF 10

**HOLE No.**  
BHC27

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC27</b>	
LOGGED BY: LF FIELDWORK BY:		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 50.0 m		Coordinates: ,	
TEMPLATE REF: GEL AGS BH BETA				DATES 02-Jan-18 - 15-Jan-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0	10	20	30	40													
				Dark grey sandy CLAY (continued)								22.00	22	B36 UT36	(95)									
				22.45 Becoming thinly laminated with depth																				
				Dark grey slightly gravelly clayey medium SAND. Gravel of subangular fine shell fragments			24.10					24.00	24	S B42	5 5 6 7 7 8	28								
				Dark grey silty fine and medium SAND			25.00					25.00	25	B44 UT43	(105)									
												26.00	26	S B46	5 7 13 16 17 4	62*								
												27.00	27	S B48	10 15 16 21 13	75*								

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

**SAMPLE AND TEST KEY**

D	Small disturbed sample	S	Standard penetration test
B	Bulk disturbed sample	C	Cone penetration test
U	Undisturbed sample	K	Permeability test
P	Piston sample		
J	Disturbed jar sample		
ES	Environmental soil sample		
W	Water Sample		

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

**PROJECT No.**  
2543,GI

**SHEET**  
5 OF 10

**HOLE No.**  
BHC27

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC27															
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 6 OF 10															
FIELDWORK BY:		DATE:		Uncased to 50.0 m				DATES 02-Jan-18 - 15-Jan-18				PROJECT NO. 2543,GI															
TEMPLATE REF: GEL AGS BH BETA																											
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes						
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>			
				Dark grey silty fine and medium SAND (continued)	X		0	10	20	30	40																
					X								76	28.00	S	B50	7 19 21 29	76*									
					X								76	29.00	S	B52	10 16 35 15	76*									
					X								69	30.00	S	B54	4 15 23 27	69*									
					X																						
					X								79	31.50	S	B56	12 17 24 26	79*									
					X																						
					X								68	32.50	S	B58	8 13 19 24 4	68*									
					X																						

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve



PROJECT No. 2543,GI  
 SHEET 6 OF 10  
 HOLE No. BHC27

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543.GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC27</b>	
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)		Coordinates: ,	
FIELDWORK BY:		DATE:		Uncased to 50.0 m		DATES 02-Jan-18 - 15-Jan-18	
TEMPLATE REF: GEL AGS BH BETA						PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>
								0	10	20	30	40											
				Dark grey silty fine and medium SAND (continued)	X								33										
					X								68										
					X								33.50	S	B60	8 10 13 17 20	68*						
					X								34										
					X								73										
					X								34.50	S	B62	6 17 20 27 3	73*						
					X								35										
					X								97										
					X								35.50	S	B64	20 27 36 14	97*						
					X								36										
					X								67										
					X								36.50	S	B66	5 12 24 26	67*						
					X								37										
					X								87										
					X								37.50	S	B68	17 20 25 25	87*						
					X								38										
					X								76										

<p>*WATER  Standing water level</p> <p> Water strikes</p>	<p>PIEZOMETER </p>	<p>Upper seal </p> <p>Response zone </p> <p>Lower seal </p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count</p> <p>SPT N N = SPT N value (blows after seating)</p> <p>&lt;425 N*120 = Total blows/penetration including seating</p> <p>Sample % passing 425 micron sieve</p>	<p>Geosphere Environmental</p>	<p>PROJECT No. 2543,GI</p> <p>SHEET 7 OF 10</p> <p>HOLE No. BHC27</p>
---	--------------------	---	--	--	--	--------------------------------	---

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC27														
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 8 OF 10														
FIELDWORK BY:		DATE:		Uncased to 50.0 m				DATES 02-Jan-18 - 15-Jan-18				PROJECT NO. 2543,GI														
TEMPLATE REF: GEL AGS BH BETA				Additional Tests and Notes																						
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing										
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>			
				Dark grey silty fine and medium SAND (continued)	X		0	10	20	30	40	76	38.50	S	B70	8 18 35 15	76*									
					X								39													
					X								93	S	B72	13 30 50	93*									
					X								40													
					X								83	S	B74	15 18 35 15	83*									
					X								41													
					X								82	S	B76	12 20 25 25	82*									
					X								42													
					X								70	S	B78	5 15 50	70*									
					X								43													
					X								95	S	B80	15 30 50	95*									
					X								44													

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

PROJECT No.  
2543,GI

SHEET  
8 OF 10

HOLE No.  
BHC27

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

<b>CLIENT: Suffolk County Council</b>				<b>PROJECT: Lake Lothing</b>				<b>GROUND LEVEL m</b>				<b>HOLE No. BHC27</b>											
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 9 OF 10											
FIELDWORK BY:		DATE:		Uncased to 50.0 m				DATES 02-Jan-18 - 15-Jan-18				PROJECT NO. 2543,GI											
TEMPLATE REF: GEL AGS BH BETA		Additional Tests and Notes																					
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>
				Dark grey silty fine and medium SAND (continued)			0	10	20	30	40												
				44.20 White shell fragments present with depth	X							44											
					X							44.20	B81										
					X							44.50	S B83	12 15	26 24	77*							
					X							45											
					X							45.50	S B85	18 25	40 10	93*							
					X							46											
					X							46.50	S B87	14 25	25 50	64*							
					X							47											
					X							47.50	S B89	12 17	27 23	79*							
					X							48											
					X							48.50	S B91	10 28	50	88*							
					X							49											
					X							49.00	B92										

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal  
 Response zone  
 Lower seal

**SAMPLE AND TEST KEY**  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
SPT N N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve



**PROJECT No.**  
**2543,GI**  
**SHEET**  
**9 OF 10**  
**HOLE No.**  
**BHC27**

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY 2 FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK) (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRON

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC27															
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates: ,				SHEET 10 OF 10															
FIELDWORK BY:		DATE:		Uncased to 50.0 m				DATES 02-Jan-18 - 15-Jan-18				PROJECT NO. 2543,GI															
TEMPLATE REF: GEL AGS BH BETA				Additional Tests and Notes																							
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing											
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>				
				Dark grey silty fine and medium SAND (continued)	X		0	10	20	30	40																
						50.00						86	50	S	8 28	45 5	86*										
													51														
													52														
													53														
													54														
													55														

Borehole completed at 50.0m depth. Backfilled with bentonite grout to 13.0m bgl

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve



PROJECT No. 2543,GI  
 SHEET 10 OF 10  
 HOLE No. BHC27

DEPTH All depths, level and thicknesses in metres

CLIENT: Suffolk County Council

PROJECT: Lake Lothing

GROUND LEVEL 2.99m

HOLE No. BHC28

LOGGED BY: AH  
FIELDWORK BY: J & M  
TEMPLATE REF: GEL AGS BH BETA

CHECKED BY: SG  
DATE: 07/11/2017

EXCAVATION METHOD: Cable Percussion (shell and auger)  
380mm cased from 0.0 to 2.5m  
300mm cased from 2.5 to 19.4m  
250mm cased from 19.4 to 22.0m

Coordinates:  
DATES 31/10/2017 - 14/11/2017

SHEET 1 OF 6  
PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	SPT 'N' Value					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes															
								0	10	20	30	40	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	p Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>														
				Reinforced CONCRETE.			0.00																															
				MADE GROUND (Brown gravelly medium sand. Gravel of fine to medium subrounded to angular flint and fine to medium subrounded concrete.)			0.15																															
				CONCRETE			0.36																															
				MADE GROUND (Brown medium slightly clayey to gravelly sand. Gravel of fine to medium subrounded to angular flint with occasional fine to cobble sized subrounded to subangular concrete.)			0.52																															
				Brown firm sandy slightly gravelly CLAY. Gravel of fine angular flint.			0.75																															
				Grey brown medium to coarse slightly clayey organic SAND with occasional fine to medium subrounded to rounded flint.			2.60																															
				Dark grey brown medium to coarse slightly organic gravelly SAND. Gravel is fine to coarse angular flint.			3.00																															
				Light brown grey medium slightly gravelly SAND. Gravel is fine to coarse subangular to subrounded flint.			3.30																															
				Light brown grey SAND and GRAVEL. Gravel of fine to coarse with rare cobble sized subangular flint.			4.00																															
				Light brown medium slightly gravelly SAND. Gravel of fine to medium subangular flint and quartz.			5.00																															
				Light brown SAND and GRAVEL. Sand is medium and gravel is fine to medium with occasional coarse subangular flint.			9.00																															

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 20/11/17

\*WATER  
Standing water level  
Water strikes

PIEZOMETER

Upper seal  
Response zone  
Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N  
SPT blows for each 75mm increment (35) Undisturbed sample blow count  
N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve



PROJECT NO 2543,GI  
SHEET 1 OF 6  
HOLE No. BHC28

DEPTH All depths, level and thicknesses in metres



**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL 2.99m**      **HOLE No. BHC28**  
 LOGGED BY: AH      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates:      SHEET 2 OF 6  
 FIELDWORK BY: J & M      DATE: 07/11/2017      380mm cased from 0.0 to 2.5m      DATES 31/10/2017 - 14/11/2017      PROJECT NO. 2543,GI  
 TEMPLATE REF: GEL AGS BH BETA      300mm cased from 2.5 to 19.4m

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	SPT 'N' Value		Sampling/In-Situ Testing			Laboratory Testing						Additional Tests and Notes			
								0	10	20	30	40	Depths	Type	No.	Blows	SPT N	<425 %		WC %	PL %	LL %
				Light brown SAND and GRAVEL. Sand is medium and gravel is fine to medium with occasional coarse subangular flint. (continued)						10.00	D	24	13	29								
										10.20	D	24	34									
										10.50-11.00	B	25	715									
										11.00	D	26	44	26								
										11.00	D	26	45									
										11.00	D	26	710									
				Grey brown medium to coarse gravelly SAND with very soft clay laminations.			11.80			11.80	B	27										
				Grey fine to medium clayey SAND.			12.00			12.00	D	28	24	24								
				Grey soft to firm sandy slightly gravelly CLAY. Gravel is fine to meium subangular to subrounded flint.			12.20			12.00	D	29	66									
							12.20			12.45	D	29	66									
							12.20			12.10	B	30	66									
							12.20			12.20	B	30	66									
							12.20			12.20	B	30	66									
				Grey fine slightly gravelly SAND.			13.00			12.50												
				Light orange brown coarse slightly gravelly SAND. Gravel of fine to medium subrounded to rounded flint.			13.20			13.00	UT100	31	(52)									
				Grey brown SAND and GRAVEL. Sand is coarse and gravel is fine to medium rounded flint.			13.50			13.45												
							13.50			13.50	D	32										
							13.50			13.50	B	33										
							13.50			13.50	B	33										
				Brown slightly clayey SAND and GRAVEL. Sand is medium to coarse and gravel is fine to medium subrounded flint.			14.00			14.00	D	34	45	30								
							14.00			14.20	D	34	87									
							14.00			14.50	B	35	87									
							14.00			15.00												
				Orange brown medium SAND with occasional fine subrounded flint gravel.			15.50			15.00	D	36	11	33								
							15.50			15.50	B	37	35									
							15.50			16.00			1015									
				Grey brown medium SAND with occasional fine subrounded flint gravel.			16.30			16.00	D	38	57	39								
							16.30			16.45			710									
							16.30			16.45	D	38	1210									
							16.30			16.50	D	39										
							16.30			16.50	B	40										
							16.30			17.00												
				Grey brown fine to medium slightly clayey SAND.			17.20			17.00	D	41	33	30								
							17.20			17.45	B	42	77									
							17.20			17.00	B	42	88									
							17.20			17.50												
				Grey firm sandy CLAY.			17.70			17.90	D	43										
							17.70			18.00	UT100	44	(40)									
				Grey fine to medium slightly clayey SAND.			18.20															
							18.20			18.70	D	45										
							18.20			18.70	B	46										
							18.20			19.00	D	47	15	42								
							18.20			19.00	B	48	1010									
							18.20			19.45			1012									
							18.20			19.00												
							18.20			19.50												
							18.20			20.00												

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal      SAMPLE      D Small disturbed sample      S Standard penetration test      Blows      SPT blows for each 75mm increment  
 Response zone      AND      B Bulk disturbed sample      C Cone penetration test      N = SPT N value (blows after seating)  
 Lower seal      TEST      U Undisturbed sample      K Permeability test      SPT N      N\*120 = Total blows/penetration including seating  
 KEY      P Piston sample      J Disturbed jar sample      ES Environmental soil sample      <425      Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres      W Water Sample

**Geosphere Environmental Ltd**

PROJECT No. 2543,GI  
 SHEET 2 OF 6  
 HOLE No. BHC28

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 20/11/17

<b>CLIENT: Suffolk County Council</b>				<b>PROJECT: Lake Lothing</b>						<b>GROUND LEVEL 2.99m</b>					<b>HOLE No. BHC28</b>									
LOGGED BY: AH		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)						Coordinates:					SHEET 3 OF 6									
FIELDWORK BY: J & M		DATE: 07/11/2017		380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m						DATES 31/10/2017 - 14/11/2017					PROJECT NO. 2543,GI									
TEMPLATE REF: GEL AGS BH BETA		250mm cased from 19.4 to 25.0m		SPT 'N' Value						Sampling/In-Situ Testing					Laboratory Testing		Additional Tests and Notes							
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
								0	10	20	30	40												
				Grey fine silty SAND.	X		20.00						20.00	D	49	5 9								
					X								20.45	B	50	12 22								
					X								20.00-			14								
					X								20.50											
				Brown coarse SAND.	X		21.00						21.00											
				Grey fine silty SAND.	X		21.10						21.10											
				Grey clayey SILT.	X		21.30						21.30											
					X								21.40	D	51	4 6	25							
					X								21.85	B	52	5 6								
					X								21.50-			7 7								
					X								21.70	D	53									
					X								22.00											
					X								22.30-	UT100	54									
					X								22.75											
					X								23.00	D	55		25							
					X								23.00-	B	58	2 5								
					X								23.50	D	57	6 6								
					X								23.10-			6 7								
					X								23.55											
				Grey medium to coarse silty SAND with occasional shell fragments.	X		23.80						23.80											
					X								24.00-	B	60	3 3	49							
					X								24.60	D	59	8 10								
					X								24.10-			16 15								
				Grey firm to stiff CLAY.	X		24.50						24.55											
				Grey fine silty SAND.	X		24.70						24.70											
					X								25.00-	D	61	8 16	124*							
					X								25.45	B	62	21 29								
					X								25.00-			31 19								
				Very dense grey silty fine and medium SAND.	X		25.50						25.50											
					X								26.00	D	63									
					X								26.00											
					X								26.50-	B	65	5 5	58*							
					X								27.00			10 11								
					X								27.00			20 7								
					X								27.50	B	67	5 8	55*							
					X								28.00			12 18								
					X								28.00			12								
					X								28.80-	B	69	3 6	57*							
					X								29.00			8 12								
					X								29.00			16 12								
					X								29.50-	B	71	5 10	65*							
					X								30.00			15 23								
					X								30.00			12								

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 20/11/17

\*WATER Standing water level PIEZOMETER Upper seal  
 Water strikes Response zone  
 Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N  
SPT N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd

PROJECT No  
2543,GI  
SHEET  
3 OF 6  
HOLE No.  
BHC28

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS 3\_1.GDT 20/11/17

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 2.99m</b>			<b>HOLE No. BHC28</b>		
LOGGED BY: AH FIELDWORK BY: J & M TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 07/11/2017		EXCAVATION METHOD: Cable Percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 32.0m			Coordinates: DATES 31/10/2017 - 14/11/2017		
							PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	SPT 'N' Value				Sampling/In-Situ Testing			Laboratory Testing							Additional Tests and Notes				
								0	10	20	30	40	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		$\rho$ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
				Very dense grey silty fine and medium SAND. (continued)	X		30.30						30													
				Very stiff grey sandy SILT	X		30.50						30.40-30.50	D 72												
				Very dense grey silty fine and medium SAND	X		30.50						30.50-31.00	B 74	5 10 15 15 20											
					X								31													
					X								31.50-31.95	GT100 75	(90)											
					X								32													
					X								32.20-32.50	D 76												
					X								32.50-33.00	B 78	5 10 20 30											
					X								33													
					X								33.50-34.50	B 80	5 9 14 12 11 20											
					X								34													
					X								34.50-35.50	B 82	6 11 16 29 5											
					X								35													
					X								35.50-36.00	B 84	9 16 20 30											
					X								36													
					X								36.50-37.00	B 86	4 10 30 20											
					X								37													
					X								37.50-38.00	B 88	10 10 15 16 19											
					X								38													
					X								38.50-39.50	B 90	8 20 50											
					X								39													
					X								39.50-40.00	B 92	9 27 50											
					X								40													

<p>*WATER <math>\nabla</math> Standing water level</p> <p><math>\nabla</math> Water strikes</p>	<p>PIEZOMETER</p>	<p>Upper seal</p> <p>Response zone</p> <p>Lower seal</p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT N</p> <p>SPT N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	<p>Geosphere Environmental Ltd</p>	<p>PROJECT NO 2543,GI</p>	<p>SHEET 4 OF 6</p>	<p>HOLE No. BHC28</p>
<p>DEPTH All depths, level and thicknesses in metres</p>									



**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL 2.99m**      **HOLE No. BHC28**

LOGGED BY: AH      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates:      SHEET 6 OF 6

FIELDWORK BY: J & M      DATE: 07/11/2017      380mm cased from 0.0 to 2.5m      DATES 31/10/2017 - 14/11/2017      PROJECT NO. 2543,GI

TEMPLATE REF: GEL AGS BH BETA      300mm cased from 2.5 to 19.4m      250mm cased from 19.4 to 24.0m

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	SPT 'N' Value					Sampling/In-Situ Testing			Laboratory Testing						Additional Tests and Notes			
								0	10	20	30	40	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							50.00						50	D	113										
													51												
													52												
													53												
													54												
													55												
													56												
													57												
													58												
													59												
													60												

Draft

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 20/11/17

\*WATER Standing water level    PIEZOMETER

Water strikes

Upper seal      **SAMPLE AND TEST KEY**

Response zone      D Small disturbed sample

Lower seal      B Bulk disturbed sample

U Undisturbed sample      C Cone penetration test

P Piston sample      K Permeability test

J Disturbed jar sample

ES Environmental soil sample

W Water Sample

DEPTH All depths, level and thicknesses in metres

S SPT blows for each 75mm increment      Blows SPT blows for each 75mm increment

(35) Undisturbed sample blow count      N = SPT N value (blows after seating)

N\*120 = Total blows/penetration including seating

<425 Sample % passing 425 micron sieve


Geosphere Environmental Ltd

**PROJECT No**  
**2543,GI**  
**SHEET**  
**6 OF 6**  
**HOLE No.**  
**BHC28**

CLIENT: Suffolk County Council					PROJECT: Lake Lothing							GROUND LEVEL m					HOLE No. BHC32								
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA			CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m							Coordinates: 653899.03, 292895.32 DATES 07-Mar-18 - 15-Mar-18					SHEET 1 OF 8 PROJECT NO. 2543,GI								
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing					Laboratory Testing					Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m³	Cu kN/m²		
				MADE GROUND (Dark brown gravelly coarse sand. Gravel is subangular to rounded flints and clinker)		0.00					0														
				MADE GROUND (Yellow brown / dark brown silty slightly gravelly medium to coarse sand. Gravel is angular to rounded fine flint and occasional clinker)		0.50					0.30	ES	B1 J1											VOC=1ppm (peak)	
				MADE GROUND (Yellow brown slightly gravelly silty/clayey sand. Gravel is fine and occasional medium flints.)		1.00					0.50	ES	B2 J2											VOC=1ppm (peak)	
				Brown/grey slightly silty fine to medium SAND, with very occasional fine rounded to angular flint gravel		1.30					1.10	ES	B3 J3											VOC=1ppm (peak)	
						1.30					1.20	ES	W1 B5											VOC=1ppm (peak)	
				Dark grey / black medium fine SAND with occasional small clay pockets and fine rounded to angular flints		1.50					1.30	ES	J4											VOC=1ppm (peak)	
						1.70					1.50	S	B6	1 0			3								
						2.00					1.70	S		1 0											VOC=0ppm (peak)
				Dark grey / black silty CLAY with moderate - strong natural organic odour		2.50					2.00	ES	J5												VOC=1ppm (peak)
						2.50					2.50	S	B7 J6	1 0			3								VOC=1ppm (peak)
				Dark grey / black silty CLAY with moderate - strong natural organic odour		3.50					3.00	ES	B9 D8 J7	1 0			2								VOC=1ppm (peak)
						3.50					3.50	S		0 1											
				Dark grey / black clayey fine to medium SAND with moderate strong natural organic odour		4.00					4.00		B12 UT10	(25)											
						4.00					4.00														
				Grey brown sandy CLAY		4.60					4.50	ES	B13 D11 J8	4 3			10								VOC=1ppm (peak)
						4.60					4.50	S		2 3											
											5.00		B15												
											5.34		D14												

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17 - AGS TEST.GPJ\_GINT STD\_AGS 3\_1.GDT\_19-3-18

\*WATER Standing water level Water strikes  
 PIEZOMETER  
 SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample  
 Upper seal Response zone Lower seal  
 S Standard penetration test Blows SPT N (35) Undisturbed sample blow count, C Cone penetration test, K Permeability test, SPT N N = SPT N value (blows after seating), N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve


  
 Geosphere Environmental  
 PROJECT No. 2543,GI  
 SHEET 1 OF 8  
 HOLE No. BHC32

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC32</b>	
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: 653899.03, 292895.32	
				DATES 07-Mar-18 - 15-Mar-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
					Leg	Reduced Level	Depth	SPT 'N' Value	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
				Grey brown sandy CLAY (continued)			0 10 20 30 40	5.50	ES	J9									VOC=1ppm (peak)		
				Pale grey silty sandy CLAY		6.00		6.00	S	B17 D16	1 2 2 4 3 4	13							VOC=0ppm (peak)		
				Grey brown very clayey fine to medium SAND with occasional fine subangular flints.		7.00		7.00	S	B20 D19	2 4 6 6 10 11	33							VOC=0ppm (peak)		
								7.30	ES	J11									VOC=0ppm (peak)		
								8.00	S	B22 D21	2 2 3 4 3 4	14							VOC=0ppm (peak)		
				Grey brown slightly silty slightly sandy CLAY		9.00		8.30	ES	J12									VOC=0ppm (peak)		
								9.00		B25 UT23	(28)								VOC=0ppm (peak)		
								9.30	ES	J13									VOC=0ppm (peak)		
								9.41		D24									VOC=0ppm (peak)		
				Grey silty fine and medium SAND		9.80		9.80		D26									VOC=0ppm (peak)		
								10.10	S	B28 D27	1 1 2 2 2 3	9							VOC=0ppm (peak)		
								10.30	ES	J14									VOC=0ppm (peak)		

\*WATER Standing water level PIEZOMETER

Upper seal Response zone Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample	S Standard penetration test	Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
B Bulk disturbed sample	C Cone penetration test	N = SPT N value (blows after seating)
U Undisturbed sample	K Permeability test	N*120 = Total blows/penetration including seating
P Piston sample		<425 Sample % passing 425 micron sieve
J Disturbed jar sample		
ES Environmental soil sample		
W Water Sample		

DEPTH All depths, level and thicknesses in metres







Geosphere Environmental  
**PROJECT No. 2543,GI**  
**SHEET 2 OF 8**  
**HOLE No. BHC32**

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ GINT STD.AGS 3.1.GDT 19-3-18

GEL AGS BH BETA 2543 GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_19-3-18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>			<b>HOLE No. BHC32</b>		
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m			Coordinates: 653899.03, 292895.32		
							DATES 07-Mar-18 - 15-Mar-18		
							PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes								
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>					
				Grey silty fine and medium SAND (continued)	X			0	10	20	30	40	11.00	11	S	B30 D29	1 0 2 2 7 1	12										
				Black and brown very sandy CLAY. Sand is fine and medium	X				11.30																			
				Dark brown and grey medium and coarse silty slightly gravelly SAND. Gravel of angular to subrounded medium flint	X				12.00				12.00	12	S	B32 D31	4 4 4 6 7 10	27										
				Grey silty fine SAND	X				13.10				13.00	13	S	B34 D33	4 3 4 6 11 11	32										
					X								14.00	14	S	B36 D35	5 6 8 10 15 16	49										
					X								15.00	15	S	B38 D37	4 6 8 12 16 14	50*										
				Grey clayey fine SAND	X				16.00				16.00	16	S	B40 D39	3 4 4 5 6 7	22										

\*WATER  Standing water level  PIEZOMETER  Upper seal  
 Water strikes  Response zone  
 Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

 Geosphere Environmental

PROJECT No.  
2543,GI  
SHEET  
3 OF 8  
HOLE No.  
BHC32



GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_19-3-18

CLIENT: Suffolk County Council					PROJECT: Lake Lothing						GROUND LEVEL m			HOLE No. BHC32									
LOGGED BY: JG		CHECKED BY:		EXCAVATION METHOD: Cable Percussion (shell and auger)											Coordinates: 653899.03, 292895.32			SHEET 4 OF 8					
FIELDWORK BY: DRILLT		DATE:		Uncased to 40.0 m											DATES 07-Mar-18 - 15-Mar-18			PROJECT NO. 2543,GI					
TEMPLATE REF: GEL AGS BH BETA																							
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths		Type	No.	Blows	SPT N	<425 %	WC %		PL %	LL %	r Mg/m <sup>3</sup>
				Grey clayey fine SAND ( <i>continued</i> )			0	10	20	30	40												
												17.00	17	UT41	(38)								
												18.00	18	S B42	3 4 8 12 14 16	57*							
				Grey silty sandy CLAY. Sand is fine			18.50					19.00	19	B46 UT44	(65)								
												19.70	19	DS45									
												20.00	20	S B58	4 6 7 9 10 12	38							
				Grey clayey fine SAND with clay bands (c. 20mm in thickness)			20.60					21.00	21	S B49	4 5 6 6 6 4	22							
												22	22										

\*WATER Standing water level PIEZOMETER Upper seal

Water strikes

	Response zone	SAMPLE AND TEST KEY	D	Small disturbed sample	S	Standard penetration test
	Lower seal		B	Bulk disturbed sample	C	Cone penetration test
			U	Undisturbed sample	K	Permeability test
			P	Piston sample		
			J	Disturbed jar sample		
			ES	Environmental soil sample		
			W	Water Sample		

Geosphere Environmental

PROJECT No. 2543,GI

SHEET 4 OF 8

HOLE No. BHC32

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC32</b>	
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: 653899.03, 292895.32	
				DATES 07-Mar-18 - 15-Mar-18		SHEET 5 OF 8	
						PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes						
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>				
							0	10	20	30	40																
				Grey clayey fine SAND with clay bands (c. 20mm in thickness) (continued)								22.00	22	S	B51	4 6 8 10 9 10	37										
												23.00	23		B59 UT52	(50)											
												23.70			D53												
												24.00	24	S	B55	8 8 12 20 18	66*										
												25.00	25		B60 UT56	(150)											
				Grey silty fine SAND with white shell fragments								25.70			D57												
				26.00 White shell fragments becoming less frequent with depth								26.00	26	S	B62	8 12 12 15 16 7	70*										
												27.00	27	S	B64	6 7 6 8 18 18	63*										

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S Standard penetration test, C Cone penetration test, K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count, SPT N N = SPT N value (blows after seating), N\*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental

PROJECT No. 2543,GI  
SHEET 5 OF 8  
HOLE No. BHC32

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_19-3-18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC32</b>	
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: 653899.03, 292895.32	
				DATES 07-Mar-18 - 15-Mar-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes								
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>						
							0	10	20	30	40																			
				Grey silty fine SAND with white shell fragments <i>(continued)</i>	X							72	28.00	28	S	B66	10 12 18 22 10	72*												
					X							74	29.00	29	S	B68	8 16 25 25	74*												
					X							75	30.00	30	S	B70	9 16 28 22	75*												
					X							68	31.00	31	S	B72	4 14 15 16 19	68*												
					X							75	32.00	32	S	B74	25 27 23	75*												
					X							75		33																

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT 19-3-18

\*WATER Standing water level PIEZOMETER

Upper seal Response zone Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample    C Cone penetration test    (35) Undisturbed sample blow count  
 U Undisturbed sample    K Permeability test    SPT N N = SPT N value (blows after seating)  
 P Piston sample    N\*120 = Total blows/penetration including seating  
 J Disturbed jar sample    <425 Sample % passing 425 micron sieve  
 ES Environmental soil sample  
 W Water Sample

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental

PROJECT No.  
2543,GI

SHEET  
6 OF 8

HOLE No.  
BHC32

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC32</b>	
LOGGED BY: JG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 40.0 m		Coordinates: 653899.03, 292895.32	
				DATES 07-Mar-18 - 15-Mar-18		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes							
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>					
				Grey silty fine SAND with white shell fragments <i>(continued)</i>	X			0	10	20	30	40	75	33.00	33	S	B76	10 15 15 16 19	75*										
					X								75	34.00	34	S	B78	18 7 28 22	75*										
				Grey silty fine SAND with occasional white shell fragments	X								75	35.00	35	S	B80	25 32 18	75*										
					X								99	36.00	36	C	B81	8 17 29 45	99*										
					X								75	37.00	37	S	B83	25 50											
					X								75	38.00	38	S	B85	12 13 20 30	75*										

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17 - AGS TEST.GPJ\_GINT STD.AGS 3\_1.GDT\_19-3-18

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count  
 SPT N N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



PROJECT No.  
2543,GI  
SHEET  
7 OF 8  
HOLE No.  
BHC32



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL 3.075m</b>				<b>HOLE No. BHC101</b>		
LOGGED BY: JG FIELDWORK BY: HOLMES TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 200mm cased from 0.0 to 23.5m 150mm cased from 23.5 to 38.4m				Coordinates: 653870.537, 292661.398			
								DATES 12/12/2017 - 19/12/2017			
								PROJECT NO. 2543,GI			


Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>			
								0	10	20	30	40															
				CONCRETE (Concrete with 2-5mm rebar)		0.00							0														
				CONCRETE (Brown grey to grey concrete recovered as a sandy gravel with some subbase/degraded concrete throughout. Sand is fine to coarse. Gravel is very angular to subrounded concrete, red brick and occasional rounded flints. Hydrocarbon odour) 0.30 - 2.00 Layers of concrete throughout the strata; ranging from degraded crumbly state to solid. 0.70 Three disused 6 inch pipes entering the pit from the southern wall, all filled with soils.		0.20							0.30	ES	J1												VOC = 1ppm
													0.90	ES	J2												VOC = 4ppm
													1.40	ES	J3												VOC = 6ppm 1.4m sample is comprised of crushed concrete and red brick and is red/grey in colour.
				MADE GROUND (Slightly brown grey slightly sandy gravel. Gravel is rounded to slightly angular fine and medium flints. Strong hydrocarbon odour)		2.00							2.10	ES	J4												Slow/moderate inflow of water at 2.1m VOC = 3ppm
				Grey becoming slightly grey brown silty gravelly fine SAND. Gravel of angular to subrounded fine flint with moderate hydrocarbon odour		2.50							2.40	EW	W1												Water sample taken as water flowed into the excavation. Groundwater exhibited a black hydrocarbon "sheen".
													2.50	ES	J5												VOC = 4ppm. Hand dug pit to 2.4m, casing placed in the hole and backfilled with arisings. VOC = 1ppm
													3.00	B	2	23		14									VOC = 1ppm
													3.50	ES	J6	34											VOC = 1ppm
													3.50	C	1	34											VOC = 1ppm
													4.00	ES	J7												VOC = 1ppm
				3.50 Gravel becoming less frequent with depth									4.00	B	3	21		3									VOC = 1ppm
													4.00	ES	J8	10											VOC = 1ppm
													4.00	C	1	11											VOC = 1ppm
				4.00 Becoming slightly grey brown and hydrocarbon odour no longer present with depth									5.00	B	4	12		19									VOC = 1ppm
													5.00	ES	J9	34											VOC = 1ppm
													5.00	C	1	57											VOC = 1ppm
				6.00 - 7.00 Band of angular to subrounded fine and medium gravel									6.00	B	5	12		16									VOC = 0ppm
													6.00	ES	J10	23											VOC = 0ppm
													6.00	C	1	56											VOC = 0ppm
													7.00	B	6	47		32									VOC = 0ppm
													7.00	ES	J11	78											VOC = 0ppm
													7.00	C	1	98											VOC = 0ppm
													8.00	B	7	23		30									VOC = 0ppm
													8.00	B	8	46											VOC = 0ppm
													8.00	ES	J12	812											VOC = 0ppm
													9.00	B	9	12		12									VOC = 0ppm
													9.00	ES	J13	23											VOC = 0ppm
													9.00	C	1	34											VOC = 0ppm
													9.80	D	10	714		36									VOC = 0ppm
													10.00	B	11	109											VOC = 0ppm
													10.00	ES	J14	89											VOC = 0ppm

GEL AGS BH BETA 2543,GI - LAKE LOTHING_05-12-17.GPJ GINT STD AGS 3 1.GDT 5/1/18	*WATER Standing water level Water strikes	PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N <425	SPT blows for each 75mm increment (35) Undisturbed sample blow count N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating Sample % passing 425 micron sieve	<p>Geosphere Environmental Ltd Brightwell Barns, Ipswich Road Brightwell, Suffolk, IP10 BJ Telephone: 01603 298076</p>	<table border="1"> <tr><td>PROJECT No</td><td>2543,GI</td></tr> <tr><td>SHEET</td><td>1 OF 4</td></tr> <tr><td>HOLE No.</td><td>BHC101</td></tr> </table>	PROJECT No	2543,GI	SHEET	1 OF 4	HOLE No.	BHC101
	PROJECT No	2543,GI													
	SHEET	1 OF 4													
HOLE No.	BHC101														

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL 3.075m</b>			<b>HOLE No. BHC101</b>	
LOGGED BY: JG FIELDWORK BY: HOLMES TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 200mm cased from 0.0 to 23.5m 150mm cased from 23.5 to 38.4m			Coordinates: 653870.537, 292661.398		SHEET 2 OF 4
							DATES 12/12/2017 - 19/12/2017		PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40												
				Grey becoming slightly grey brown silty gravelly fine SAND. Gravel of angular to subrounded fine flint with moderate hydrocarbon odour (continued)	X							11.00	D B ES	12 13 J15	10 12 25 25	72*							VOC = 0ppm. SPT final penetration 70mm
				Grey brown slightly gravelly sandy CLAY. Gravel of angular to subrounded fine flint	O							11.90	D	16	1 6	47							VOC = 0ppm
				Orange brown gravelly fine to medium SAND. Gravel of angular to subrounded flint	O							12.00	D ES B	14 J16 15	8 9 15 15								
												12.40											
				Brown gravelly silty slightly gravelly fine to medium SAND. Gravel of angular to subrounded flint	X							13.00	D B	17 18	3 2 5 8 8 11	32							
												14.00	D B	19 20	6 10 10 10 15 15	66*							SPT final penetration 40mm
												15.00	D B	21 22	9 9 12 20 18	68*							SPT final penetration 25mm
												16.00	D B	23 24	8 8 11 15 17 7	66*							SPT final penetration 10mm
				Grey slightly clayey silty fine and medium SAND	X							17.00	D B	25 26	3 4 5 8 9 11	33							
												18.00	D B	27 28	8 10 14 8 10 11	43							
												19.00	D B	29 30	10 17 35 15	77*							SPT final penetration 35mm
				Grey clayey silty fine SAND	X							20.00	D B	31 32	8 12 25 25	70*							SPT final penetration 40mm
												21.00											

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17.GPJ\_GINT STD AGS 3\_1.GDT\_5/1/18

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment	 Geosphere Environmental Ltd Brightwell Barns, Ipswich Road Brightwell, Suffolk, IP10 BJ Telephone: 01603 298076	PROJECT No 2543,GI SHEET 2 OF 4 HOLE No. BHC101
	Water strikes		Response zone	B Bulk disturbed sample	C Cone penetration test	SPT N	(35) Undisturbed sample blow count			
			Lower seal	U Undisturbed sample	K Permeability test		N = SPT N value (blows after seating)			
				P Piston sample			N*120 = Total blows/penetration including seating			
				J Disturbed jar sample			<425 Sample % passing 425 micron sieve			
				ES Environmental soil sample						
				W Water Sample						

DEPTH All depths, level and thicknesses in metres

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL 3.075m**      **HOLE No. BHC101**  
 LOGGED BY: JG      CHECKED BY:      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates: 653870.537, 292661.398      SHEET 3 OF 4  
 FIELDWORK BY: HOLMES      DATE:      200mm cased from 0.0 to 23.5m      DATES 12/12/2017 - 19/12/2017      PROJECT NO. 2543,GI  
 TEMPLATE REF: GEL AGS BH BETA      150mm cased from 23.5 to 38.4m

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0	10	20	30	40	74													
				Grey clayey silty fine SAND (continued)									21.00	D	33	10 14	74*								SPT final penetration 70mm
				Brown coarse SAND		21.30								B	34	14 36									
				Grey silty SAND		21.40																			
				Grey silty CLAY		21.80							21.80	D	35										
													22.00	UT100	36										
													22.60	D	37										
														B	38										
													23.00	D	39	10 10	49								
														B	40	10 12 13 14									
				Dark grey gravelly clayey medium SAND. Gravel of subangular fine shells		24.30							24.00	UT100	41										
				Grey silty SAND		24.70							24.60	D	42										
													25.00	D	43	7 10	67*								SPT final penetration 25mm
														B	44	12 12 20 6									
													26.00	D	46	12 13	46								
														B	47	10 10 12 14									
													27.00	D	48	6 11	67*								SPT final penetration 10mm
														B	49	18 27 5									
													28.00	D	50	12 15	77*								SPT final penetration 50mm
														B	51	26 24									
													29.00	D	52	9 15	74*								SPT final penetration 20mm
														B	53	34 16									
													30.00	D	54	9 14	84*								SPT final penetration 50mm
														B	55	11 27 23									
													31.00	D	56	10 17	77*								SPT final penetration 30mm
														B	57	30 20									

\*WATER Standing water level    PIEZOMETER    Upper seal    **SAMPLE AND TEST KEY**    D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 Water strikes    Response zone    U Undisturbed sample    B Bulk disturbed sample    C Cone penetration test    N = SPT N value (blows after seating)  
 Lower seal    P Piston sample    K Permeability test    U Undisturbed sample    N\*120 = Total blows/penetration including seating  
J Disturbed jar sample    ES Environmental soil sample    <425 Sample % passing 425 micron sieve  
W Water Sample

DEPTH All depths, level and thicknesses in metres

**Geosphere Environmental Ltd**  
 Brightwell Barns, Ipswich Road  
 Brightwell, Suffolk, IP10 BJ  
 Telephone: 01603 298076



**PROJECT No** 2543,GI  
**SHEET** 3 OF 4  
**HOLE No.** BHC101




GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17.GPJ\_GINT STD AGS 3\_1.GDT\_5/1/18



GEL AGS BH BETA 2543.GI - LAKE LOTHING\_05-12-17.GPJ\_GINT STD AGS 3\_1.GDT\_5/1/18

CLIENT: Suffolk County Council			PROJECT: Lake Lothing			GROUND LEVEL 3.075m					HOLE No. BHC101															
LOGGED BY: JG FIELDWORK BY: HOLMES TEMPLATE REF: GEL AGS BH BETA			CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 200mm cased from 0.0 to 23.5m 150mm cased from 23.5 to 38.4m					Coordinates: 653870.537, 292661.398 DATES 12/12/2017 - 19/12/2017			SHEET 4 OF 4 PROJECT NO. 2543.GI													
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata			Graphical Representation			Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value			Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>				
						0	10	20	30	40																
				Grey silty SAND (continued)	X							32.00	D B	58 59	9 20 41 9	79*									SPT final penetration 10mm	
					X							33.00	B	60												
					X							34.00	D B	61 62	5 7 9 11 12 16	48										
					X							35.00	B	63												
					X							36.00	D B	64 65	8 9 12 12 15 11	67*										SPT final penetration 40mm
				Grey silty slightly gravelly fine SAND. Gravel of subangular fine shell fragments	X							37.00	B	66												
					X							38.00	D B	67 68	15 20 28 22	85*										SPT final penetration 30mm
					X							39.00	B	69												
					X							40.00	D	70	17 20 22 28	87*										SPT final penetration 60mm
												41														
												42														


\*WATER  Standing water level  
 Water strikes  
PIEZOMETER

 Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N  
Blows (35) Undisturbed sample blow count  
N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

 Geosphere Environmental Ltd  
Brightwell Barns, Ipswich Road  
Brightwell, Suffolk, IP10 BJ  
Telephone: 01603 298076

PROJECT No  
2543.GI  
SHEET  
4 OF 4  
HOLE No.  
BHC101

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 3.092m</b>		<b>HOLE No. BHC102</b>	
LOGGED BY: JG FIELDWORK BY: HOLMES TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 250mm cased from 0.0 to 13.0m 200mm cased from 13.0 to 36.6m		Coordinates: 653889.341, 292661.44	
				DATES 01/12/2017 - 11/12/2017		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	
								0	10	20	30	40										
				CONCRETE and rebar (5mm)		0.00							0									
				MADE GROUND (Dark brown gravelly sand. Gravel of fine and medium brick and concrete with a very mild hydrocarbon odour)		0.17							0.30	ES	J1							PID VOC = 62 ppm
				CONCRETE		0.30																
				MADE GROUND (Dark brown/black very gravelly coarse sand. Gravel of fine and medium brick and concrete, with a very mild hydrocarbon odour)		1.00							1.00	ES	J2							PID VOC = 3 ppm
				Brown slightly clayey very gravelly medium and coarse SAND. Gravel is fine and medium rounded to subangular flints		1.40							1.50	ES	J3							PID VOC = 2 ppm
				Grey slightly sandy fine and medium GRAVEL. Sand is medium coarse and gravel is subrounded to angular flints. Moderate to strong hydrocarbon odour.		2.00							2.00-2.50	B	2							Water added from 2m to 36.5m
													2.50	ES	J4							PID VOC = 40 and 6 ppm two tests
													3.00-3.50	B	4	5 7	45					
													3.50	C		8 10						
													3.50	ES	J5							PID VOC = 2 and 4 ppm two tests
													4.00-4.50	B	6	6 8	40					
													4.50	C		12 11						
													4.50	ES	J6							PID VOC = 1 ppm
				Brown silty gravelly SAND. Gravel is fine and medium subrounded to angular flint. Mild to moderate hydrocarbon odour.		4.80							5.00-5.50	B	8	3 6	20					
													5.50	C		4 5						
													5.50	ES	J7							PID VOC = 1 ppm
				Brown slightly gravelly medium fine SAND. Gravel is fine and medium subrounded to angular flint, with occasional soft grey brown clay up to 50mm thick from 8.0m bgl. Mild Hydrocarbon odour.		6.00							6.00-6.50	B	10	2 4	27					
													6.50	C		5 7						
													6.50	ES	J8							PID VOC = 1 ppm
													7.00-7.50	B	12	3 3	27					
													7.50	C		4 6						
													7.50	ES	J9							PID VOC = 0 ppm
													8.00-8.45	B	14	2 3	19					
													8.45	S	15	4 5						
													8.00	S		5 5						PID VOC = 2 ppm
													8.50	ES	J10							
													8.50	ES	J10							
													9.00-9.45	B	17	3 4	33					
													9.45	S	18	5 7						
													9.00	S		10 11						PID VOC = 0 ppm
													9.50	ES	J11							
													9.50	ES	J11							
													10.00-10.50	B	20	2 3	23					
													10.50	S		4 5						

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
▽	Water strikes		Response zone		B Bulk disturbed sample	C Cone penetration test		(35) Undisturbed sample blow count
			Lower seal		U Undisturbed sample	K Permeability test	SPT N	N = SPT N value (blows after seating)
					P Piston sample			N*120 = Total blows/penetration including seating
					J Disturbed jar sample			Sample % passing 425 micron sieve
					ES Environmental soil sample			
					W Water Sample			

**Geosphere Environmental Ltd**  
 Brightwell Barns, Ipswich Road  
 Brightwell, Suffolk, IP10 BJ  
 Telephone: 01603 298076

**PROJECT No**  
2543,GI

**SHEET**  
1 OF 4

**HOLE No.**  
BHC102

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17.GPJ GINT STD AGS 3\_1.GDT 4/1/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 3.092m</b>		<b>HOLE No. BHC102</b>	
LOGGED BY: JG FIELDWORK BY: HOLMES TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 250mm cased from 0.0 to 13.0m 200mm cased from 13.0 to 36.6m		Coordinates: 653889.341, 292661.44	
				DATES 01/12/2017 - 11/12/2017		SHEET 2 OF 4	
						PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>	
							0	10	20	30	40													
				Brown slightly gravelly medium fine SAND. Gravel is fine and medium subrounded to angular flint, with occasional soft grey brown clay up to 50mm thick from 8.0m bgl. Mild Hydrocarbon odour. (continued)								10.50	ES	J12	7 7									PID VOC = 33 and 75 ppm
				Brown gravelly CLAY. Gravel is fine angular to subrounded flint.		12.20						11.00-11.50	B C	22	4 6 6 7 10 12	35								
					Brown gravelly silty SAND. Gravel is fine and medium subangular to rounded flint.		12.60						12.20-12.60	B	23	2 2 8 9 10 7	34							
				Brown silty slightly gravelly medium SAND. Gravel is fine and medium subangular to rounded flint.			14.00						13.00-13.50	B C	24	2 5 5 5 5 7	22							
					Grey/brown slightly clayey medium SAND.		16.20						14.00-14.50	B C	25	5 7 9 9 9 9	36							
				Grey silty fine and medium SAND.			17.40						15.00-15.50	SPT B S	26 27	4 5 7 7 10 11	35							
					Grey silty fine and medium SAND.		17.40						16.00-16.50	SPT B S	28 29	3 4 8 8 11 13	40							
				Grey silty fine and medium SAND.			17.40						17.00-17.50	SPT B S	30 31	3 4 8 11 11 12	42							
					Grey silty fine and medium SAND.		17.40						18.00-18.50	SPT B S	32 33	2 3 4 5 5 5	19							
				Grey silty fine and medium SAND.			17.40						19.00-19.50	GT100 B	34 35	(60)								
					Grey silty fine and medium SAND.		17.40						20.00-20.50	SPT B S	36 37	6 8 12 12 14 12	64*							

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment	Geosphere Environmental Ltd Brightwell Barns, Ipswich Road Brightwell, Suffolk, IP10 BJ Telephone: 01603 298076	PROJECT No 2543,GI	SHEET 2 OF 4	HOLE No. BHC102
∇	Water strikes		Response zone	B Bulk disturbed sample	C Cone penetration test	SPT N	N = SPT N value (blows after seating)					
			Lower seal	U Undisturbed sample	K Permeability test		N*120 = Total blows/penetration including seating					
				P Piston sample			<425 Sample % passing 425 micron sieve					
				J Disturbed jar sample								
				ES Environmental soil sample								
				W Water Sample								

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17.GPJ\_GINT STD\_AGS 3\_1.GDT\_4/1/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 3.092m</b>		<b>HOLE No. BHC102</b>	
LOGGED BY: JG FIELDWORK BY: HOLMES TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 250mm cased from 0.0 to 13.0m 200mm cased from 13.0 to 36.6m		Coordinates: 653889.341, 292661.44	
				DATES 01/12/2017 - 11/12/2017		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>	
						0	10	20	30	40														
				Grey silty fine and medium SAND. (continued)	X						21.00	UT100	38	(110)										
				Grey silty CLAY.	X	21.50					21.45	B	43											
					X								21.50	D	39	(85)								
					X								21.70	T100	40									
					X								21.80	B	42									
					X								22.25	D	41									
					X								22.50	D	41									
				Grey gravelly SAND. Gravel is fine subangular shells.	X	24.50					23.00	SPT	44	2 5	35									
					X								23.00	B	45	7 7								
					X								23.50	S		10 11								
					X								24.00	UT100	46	(120)								
				Grey silty fine and medium SAND with occasional thin clay bands.	X	25.00					24.45	B	48											
					X								24.50	D	47									
					X								24.60	D	47									
				Grey very silty clayey SAND.	X	28.60					25.00	SPT	49	4 8	48									
					X								25.45	B	50	10 11								
					X								25.00	S		12 15								
					X								25.50	S										
					X								26.00	SPT	51	5 10	65*							SPT final penetration 70mm
				Grey silty fine and medium SAND, with occasional small clay pockets.	X	29.50					26.45	B	52	15 16										
					X								26.00	S		19								
					X								26.50	S										
					X								27.00	SPT	53	4 14	68*							SPT final penetration 50mm
				Grey silty fine and medium SAND, with occasional small clay pockets.	X	29.50					27.45	B	54	16 20										
					X								27.00	S		14								
					X								27.50	S										
				Grey silty fine and medium SAND, with occasional small clay pockets.	X	29.50					28.00	SPT	55	8 14	72*									
					X								28.45	B	56	16 22								
				Grey silty fine and medium SAND, with occasional small clay pockets.	X	29.50					28.00	S		12										
					X								29.00	UT100	57	(100)								
					X								29.45	B	59									
					X								29.00	SPT	59									
					X								29.50	D	58									
				Grey silty fine and medium SAND, with occasional small clay pockets.	X	29.50					29.00	D	61	3 8	61*									
					X								29.45	B	62	16 17								
					X								30.00	S		17								
					X								30.45	S										
				Grey silty fine and medium SAND, with occasional small clay pockets.	X	29.50					30.00	D	63	8 25	83*									
					X								30.50	B	64	24 20								

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
∇	Water strikes		Response zone	U Undisturbed sample	B Bulk disturbed sample	C Cone penetration test	(35) Undisturbed sample blow count	N = SPT N value (blows after seating)
			Lower seal	P Piston sample	U Undisturbed sample	K Permeability test	N*120 = Total blows/penetration including seating	<425 Sample % passing 425 micron sieve
				J Disturbed jar sample				
				ES Environmental soil sample				
				W Water Sample				

DEPTH All depths, level and thicknesses in metres

**Geosphere Environmental Ltd**  
 Brightwell Barns, Ipswich Road  
 Brightwell, Suffolk, IP10 BJ  
 Telephone: 01603 298076

**PROJECT No**  
2543,GI

**SHEET**  
3 OF 4

**HOLE No.**  
BHC102

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17.GPJ GINT STD AGS 3\_1.GDT 4/1/18

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL 3.092m</b>		<b>HOLE No. BHC102</b>	
LOGGED BY: JG FIELDWORK BY: HOLMES TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 250mm cased from 0.0 to 13.0m 200mm cased from 13.0 to 36.6m		Coordinates: 653889.341, 292661.44	
				DATES 01/12/2017 - 11/12/2017		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes																				
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>																		
								0	10	20	30	40																													
				Grey silty fine and medium SAND, with occasional small clay pockets. (continued)	X								31.00-31.50	S		6																									
					X								32.00-32.45	D B S	65 66	10 24 27 23	84*																						SPT final penetration 50mm		
					X								33.00-33.50	D B S	67 68	5 7 19 15 16	62*																							SPT final penetration 35mm	
					X								34.00-34.50	D B S	69 70	3 25 28 22	78*																								SPT final penetration 20mm
					X								35.00-35.50	D B S	71 72	5 7 12 20 18	62*																								SPT final penetration 40mm
					X								36.00-36.50	D B S	73 74	6 12 10 12 14 14	68*																								SPT final penetration 20mm
													37.00																											Borehole ceased due to bailer lost and unable to continue.	

*WATER Standing water level Water strikes	PIEZOMETER Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT blows for each 75mm increment (35) Undisturbed sample blow count N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	Geosphere Environmental Ltd Brightwell Barns, Ipswich Road Brightwell, Suffolk, IP10 BJ Telephone: 01603 298076	PROJECT No <b>2543,GI</b> SHEET <b>4 OF 4</b> HOLE No. <b>BHC102</b>
---	---	---	---	---	--	---

GEL AGS BH BETA 2543,GI - LAKE LOTHING\_05-12-17.GPJ\_GINT STD AGS 3\_1.GDT 4/1/18

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC103</b>	
LOGGED BY: JG FIELDWORK BY: J&M TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 250mm cased from 0.0 to 18.5m 200mm cased from 18.5 to 38.8m		Coordinates: DATES 21/11/2017 - 29/11/2017	
						SHEET 1 OF 4 PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
						Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>
								0	10	20	30	40											
				TOPSOIL with cobble of brick at the base		0.00							0										
				MADE GROUND (Dark grey coarse sandy fine gravel of Asphalt)		0.18							0.30	J1									PID VOC = 0ppm
				MADE GROUND (Dark grey brown gravelly clayey Sand with fine to coarse gravel and cobbles of brick and mortar)		0.40							0.50	J2									PID VOC = 0ppm
				MADE GROUND (FILL) (Dark orange brown slightly gravelly medium to coarse Sand. Gravel is angular to rounded flint)		0.90							1.00	J3									PID VOC = 0ppm
				MADE GROUND (FILL) (Dark orange brown slightly gravelly medium to coarse Sand. Gravel is angular to rounded flint)		1.20							1.20	J4									PID VOC = 0ppm
				Dark orange brown / yellow brown fine and medium SAND with occasional medium gravel of quartz and flint.		1.50							1.50	S	4	5 6	33						
				Dark orange brown / yellow brown fine and medium SAND with occasional medium gravel of quartz and flint.		2.00							2.00	J5		7 8							PID VOC = 1ppm
				Grey brown clayey slightly silty gravelly SAND. Gravel of fine subangular to subrounded flint. Mild to moderate hydrocarbon odour, with moderate staining and hydrocarbon sheen.		2.50							2.50	B	5	5 4	24						PID VOC = 0ppm
				Grey brown clayey slightly silty gravelly SAND. Gravel of fine subangular to subrounded flint. Mild to moderate hydrocarbon odour, with moderate staining and hydrocarbon sheen.		3.00							3.00	C	J6	5 5							
				Brown grey gravelly slightly clayey SAND. Gravel of fine and medium subrounded to subangular flint. Mild HC odour in top 1m of this strata		2.50							2.50	3		6 8							
				Brown grey gravelly slightly clayey SAND. Gravel of fine and medium subrounded to subangular flint. Mild HC odour in top 1m of this strata		3.50							3.50	C	6	4 6	19						PID VOC = 4ppm
				Brown grey gravelly slightly clayey SAND. Gravel of fine and medium subrounded to subangular flint. Mild HC odour in top 1m of this strata		4.00							4.00		J7	6 6							
				Brown grey gravelly slightly clayey SAND. Gravel of fine and medium subrounded to subangular flint. Mild HC odour in top 1m of this strata		3.50							3.50	4		3 4							
				Brown grey gravelly slightly clayey SAND. Gravel of fine and medium subrounded to subangular flint. Mild HC odour in top 1m of this strata		4.50							4.50	C	7	1 4	14						PID VOC = 25 & 7ppm (two tests)
				Brown grey gravelly slightly clayey SAND. Gravel of fine and medium subrounded to subangular flint. Mild HC odour in top 1m of this strata		5.00							5.00		J8	4 3							
				Brown grey gravelly slightly clayey SAND. Gravel of fine and medium subrounded to subangular flint. Mild HC odour in top 1m of this strata		4.50							4.50	5		4 3							
				Orange brown slightly silty fine SAND with occasional fine subangular to subrounded flint gravel.		5.30							5.30	D	8								PID VOC = 0ppm
				Orange brown slightly silty fine SAND with occasional fine subangular to subrounded flint gravel.		5.50							5.50	C	9	4 3	20						
				Orange brown slightly silty fine SAND with occasional fine subangular to subrounded flint gravel.		6.00							6.00		J9	4 4							
				Orange brown slightly silty fine SAND with occasional fine subangular to subrounded flint gravel.		5.50							5.50	6		6 6							
				Orange brown slightly silty fine SAND with occasional fine subangular to subrounded flint gravel.		6.00							6.00	SPT	10	3 3	16						PID VOC = 0ppm
				Orange brown slightly silty fine SAND with occasional fine subangular to subrounded flint gravel.		6.45							6.45	C	11	4 5							
				Orange brown slightly silty fine SAND with occasional fine subangular to subrounded flint gravel.		6.00							6.00		J10	4 3							
				Orange brown slightly silty fine SAND with occasional fine subangular to subrounded flint gravel.		6.50							6.50										
				Orange brown slightly silty fine SAND with occasional fine subangular to subrounded flint gravel.		6.00							6.00	7									
				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint.		7.00							7.00	SPT	12	7 8	46						PID VOC = 13 & 6ppm(two tests)
				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint.		7.45							7.45	S	13	12 12							
				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint.		7.00							7.00		J11	10 12							
				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint.		7.50							7.50										
				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint.		7.00							7.00	8									
				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint.		8.00							8.00	SPT	14	1 3	15						
				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint.		8.45							8.45	S	15	3 4							
				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint.		8.00							8.00		J12	4 4							PID VOC = 0ppm
				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint.		8.50							8.50										
				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint.		8.50							8.50										
				Brown gravelly medium and coarse SAND		9.00							9.00	SPT	16	5 6	33						PID VOC = 0ppm
				Brown gravelly medium and coarse SAND		9.45							9.45	S	17	7 7							
				Brown gravelly medium and coarse SAND		9.00							9.00		J13	9 10							PID VOC = 0ppm
				Brown gravelly medium and coarse SAND		9.50							9.50										
				Brown gravelly medium and coarse SAND		10.00							10.00	SPT	18	8 12							PID VOC = 0ppm
				Brown gravelly medium and coarse SAND		10.45							10.45	S	19	15 16							

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
▽	Water strikes		Response zone		B Bulk disturbed sample	C Cone penetration test	(35) Undisturbed sample blow count	N = SPT N value (blows after seating)
			Lower seal		U Undisturbed sample	K Permeability test	N*120 = Total blows/penetration including seating	<425 Sample % passing 425 micron sieve

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 30/11/17

DEPTH All depths, level and thicknesses in metres

W Water Sample

Geosphere Environmental Ltd  
Brightwell Barns, Ipswich Road  
Brightwell, Suffolk, IP10 BJ  
Telephone: 01603 298076

PROJECT No  
2543,GI  
SHEET  
1 OF 4  
HOLE No.  
BHC103

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3.1.GDT 30/11/17

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. BHC103</b>	
LOGGED BY: JG FIELDWORK BY: J&M TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 250mm cased from 0.0 to 18.5m 200mm cased from 18.5 to 38.8m		Coordinates:	
				DATES 21/11/2017 - 29/11/2017		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes				
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
							0	10	20	30	40														
				Brown gravelly medium and coarse SAND (continued)								10.00-10.50	J14	19	70mm										
				Grey brown becoming orange brown gravelly SAND. Gravel is subrounded to subangular fine and medium flints.		11.00						10.50-10.80	B	20	5 10										
													10.80-11.25	C		12 15	18	5/10mm							
													12.00-12.45	B	21	6 7	45								
													12.45-13.00	C		7 12									
													13.00-13.45	B	22	6 13	69*								
				Grey slightly silty fine SAND with occasional small bands of clay. 18m - small band of clay within bulk sample.		17.20						13.45-13.60	C		19 31										
														13.60-14.00	D	23									
														14.00-14.50	B	24	10 12	72*							
														14.50-15.00	C		14 16								
				Grey silty fine SAND.		19.00						15.00-15.50	B	25	10 15	75*									
														15.50-15.80	C		15 20								
														15.80-16.00	D	26	3 8	49							
				Grey silty fine SAND.		19.00						16.00-16.50	B	27	9 12										
														16.50-17.00	C		13 15								
														17.00-17.45	SPT	28	1 2	27							
														17.45-17.80	B	29	3 7								
				Grey silty fine SAND.		19.00						17.80-18.00	D	20											
														18.00-18.45	S		(65)								Small band of clay within the bulk sample
														18.45-18.60	D	32									
				Grey silty fine SAND.		19.00						18.60-19.00	SPT	33	5 4	59*									
														19.00-19.45	B	34	10 20								
														19.45-19.00	S		20								
														19.00-20.00	B	35	(85)								
														20.00-20.45		36									

*WATER  Standing water level Water strikes PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	Geosphere Environmental Ltd Brightwell Barns, Ipswich Road Brightwell, Suffolk, IP10 BJ Telephone: 01603 298076	PROJECT No 2543,GI SHEET 2 OF 4 HOLE No. BHC103
---	---	---	---	---	--	--

DEPTH All depths, level and thicknesses in metres

GEL AGS BH BETA 2543.GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 30/11/17

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. BHC103														
LOGGED BY: JG		CHECKED BY: SG		EXCAVATION METHOD: Cable Percussion (shell and auger)				Coordinates:				SHEET 3 OF 4														
FIELDWORK BY: J&M		DATE:		250mm cased from 0.0 to 18.5m				DATES 21/11/2017 - 29/11/2017				PROJECT NO. 2543.GI														
TEMPLATE REF: GEL AGS BH BETA				200mm cased from 18.5 to 38.8m																						
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	Graphical Representation					Sampling/In-Situ Testing			Laboratory Testing						Additional Tests and Notes				
								SPT 'N' Value					Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>						
					0	10	20	30	40	73	Depths	Type									No.					
				Grey silty fine SAND. (continued)	X							21.00	SPT	37	8 15	73*										
					X							21.45	B	38	16 34											
				Grey silty CLAY.	X		21.60					21.50														
				Grey sandy SILT/ CLAY	X		22.00					21.80	SPT	39												
					X							22.00	B	40	(49)											
					X							22.45	S													
					X							22.60	D	41												
					X							22.60	B	42												
					X							23.00	SPT	43	7 8	46										
					X							23.00	B	44	9 10											
					X							23.45	S		12 15											
					X							23.00														
					X							23.50														
				Grey silty slightly gravelly fine SAND. Gravel is fine subangular light grey calcareous shells.	X		24.50					24.00		45	(48)											
					X							24.45														
					X							24.60	D	46												
				Grey silty SAND with occasional fine shell fragments.	X		25.00					25.00	SPT	47	6 8	46										
					X							25.45	B	48	9 10											
					X							25.00	S		12 15											
					X							25.50														
					X							26.00	SPT	49	5 8	63*										
					X							26.45	B	50	12 38											
					X							26.00	S													
					X							26.50														
					X							27.00	SPT	51	5 7	62*										
				Grey clayey silty fine SAND with occasional fine shells	X		27.40					27.45	B	52	11 20											
					X							27.00	S		19											
					X							27.50														
					X							27.70	D	53												
				Grey silty medium fine SAND.	X		28.20					28.00		54	(60)											
					X							28.45														
					X							28.60	D	55												
					X							29.00	SPT	56	8 9	67*										
					X							29.45	B	57	15 24											
					X							29.00	S		11											
					X							29.50														
					X							30.00	SPT	58	10 16	76*										
					X							30.45	B	59	21 29											
					X							30.00	S													
					X							30.50														
					X							31.00	SPT	60	8 14	72*										
					X							31.45	B	61	50											

\*WATER Standing water level PIEZOMETER  
 Water strikes

Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT blows for each 75mm increment  
SPT N (35) Undisturbed sample blow count  
N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
Brightwell Barns, Ipswich Road  
Brightwell, Suffolk, IP10 BJ  
Telephone: 01603 298076

PROJECT No  
2543.GI  
SHEET  
3 OF 4  
HOLE No.  
BHC103

DEPTH All depths, level and thicknesses in metres



**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. BHC103**  
 LOGGED BY: JG      CHECKED BY: SG      EXCAVATION METHOD: Cable Percussion (shell and auger)      Coordinates:      SHEET 4 OF 4  
 FIELDWORK BY: J&M      DATE:      250mm cased from 0.0 to 18.5m      DATES 21/11/2017 - 29/11/2017      PROJECT NO. 2543,GI  
 TEMPLATE REF: GEL AGS BH BETA      200mm cased from 18.5 to 38.8m

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>
							0	10	20	30	40											
				Grey silty SAND with occasional fine shell fragments and clayey bands	X	31.50						31.00-31.50	S									
					X							31.50-32.00	D	62	7 12	69*						
					X							32.00-32.45	B	63	16 25							
					X							32.45-32.00			9							
					X							32.00-32.50										
					X							32.50-33.00										
					X							33.00-33.45	D	64	7 13	51*						
					X							33.45-33.00	B	65	13 10							
					X							33.00-33.50			12 16							
					X							33.50-34.00										
					X							34.00-34.20	D	66	8 19	77*						
					X							34.20-34.65	B	67	14 15							
					X							34.65-34.50			21							
					X							34.50-35.00										
					X							35.00-35.45	D	68	6 8	64*						
					X							35.45-35.00	B	69	12 20							
					X							35.00-35.50			18							
					X							35.50-36.00	D	70	10 12	44						
					X							36.00-36.45	B	71	15 9							
					X							36.45-36.00			9 11							
					X							36.00-36.50										
					X							36.50-37.00	B	73								
					X							37.00-37.50	D	72	7 13	70*						
					X							37.50-37.20			23 27							
					X							37.20-37.65										
					X							37.65-38.00	D	74	6 8	64*						
				Grey silty SAND with occasional fine shell fragments	X	38.00						38.00-38.45	B	75	10 15							
					X							38.45-38.00			25							
					X							38.00-38.50										
					X							38.50-39.00	B	76	10 15	75*						
					X							39.00-39.50			50							
					X							39.50-40.00	B	77								
					X							40.00-40.00	D	78	15 50							
					X							40.00-41.00										
					X							41.00-42.00										

\*WATER Standing water level      PIEZOMETER      Upper seal      SAMPLE      D Small disturbed sample      S Standard penetration test      Blows      SPT blows for each 75mm increment  
 Water strikes      Water strikes      Response zone      AND      B Bulk disturbed sample      C Cone penetration test      SPT N      N = SPT N value (blows after seating)  
 Lower seal      Lower seal      TEST      U Undisturbed sample      K Permeability test           N\*120 = Total blows/penetration  
 KEY      P Piston sample      J Disturbed jar sample      ES Environmental soil sample      <425      Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres      W Water Sample

**Geosphere Environmental Ltd**  
 Brightwell Barns, Ipswich Road  
 Brightwell, Suffolk, IP10 BJ  
 Telephone: 01603 298076

**PROJECT No**  
 2543,GI  
**SHEET**  
 4 OF 4  
**HOLE No.**  
 BHC103

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 30/11/17



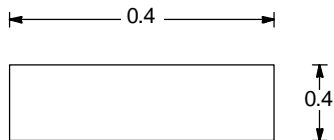
### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>IPC01</b>
Job No <b>2543,GI</b>	Date <b>15-08-17 15-08-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By <b>GEL</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-1.50	MADE GROUND (Dark brown and brown gravelly very silty fine sand. Gravel of angular to subrounded fine to coarse flint and occasional fragments of brick and flexible surfacing)		0.30-1.00	B	Groundwater not encountered during drilling
			0.30	ES	
	0.50 Becoming dark yellow brown with depth		0.60	ES	
			0.70	D	
			0.90	ES	
			1.20	ES	
			1.30	D	
				Hand pit extended from 1.2m depth with hand auger methods	
				Excavation completed at 1.5m depth due to poor recovery with hand auger and continued collapse	

Draft

GEL-AGS-TP-BETA\_2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS\_3\_1.GDT\_21-8-17



Shoring/Support:  
Stability:

All dimensions in metres Scale 1:16.6666666666667	Method Inspection pit	Plant Used HAND DUG	Checked By <b>SG</b>
--	-----------------------	---------------------	-------------------------



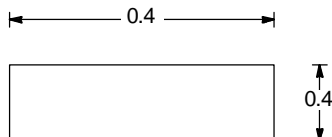
### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>IPC02</b>
Job No <b>2543,GI</b>	Date <b>15-08-17 15-08-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By <b>GEL</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-1.40	MADE GROUND (Brown gravelly very silty fine sand. Gravel of angular to subrounded fine to coarse flint and occasional fine brick fragments)		0.30-1.00	B	Groundwater not encountered during drilling
			0.30	ES	
			0.60	ES	
			0.90	ES	
			1.20	ES	
					Hand pit extended from 1.2m depth with hand auger methods
					Excavation completed at 1.4m depth due to poor recovery with hand auger and continued collapse

Draft

GEL-AGS-TP-BETA\_2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS 3\_1.GDT\_21-8-17



Shoring/Support:  
Stability:

All dimensions in metres Scale 1:16.6666666666667	Method Inspection pit	Plant Used HAND DUG	Checked By <b>SG</b>
--	-----------------------	---------------------	-------------------------

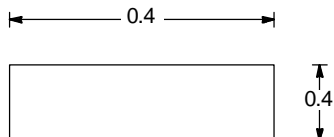


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>IPC03</b>
Job No <b>2543,GI</b>	Date <b>16-08-17</b> <b>16-08-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By <b>GEL</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.80	MADE GROUND (Dark brown very gravelly very silty fine sand. Gravel of angular to subrounded fine to coarse flint and occasional concrete and brick)		0.30-1.20	B	Groundwater not encountered during drilling
			0.30	ES	
			0.60	ES	
0.80-1.20	MADE GROUND (Dark orange brown gravelly very silty fine sand. Gravel of angular to subrounded finen to course flint and occasional concrete and brick fragments)		0.90	ES	
	1.10 Becoming pale orange brown with depth		1.20	ES	Excavation completed at 1.2m depth

Draft



Shoring/Support:  
Stability:

GEL-AGS-TP-BETA\_2543,GI - LAKE LOTHING.GPJ\_GINT STD-AGS\_3\_1.GDT\_21-8-17

All dimensions in metres Scale 1:16.6666666666667	Method Inspection pit	Plant Used	Checked By <b>SG</b>
--	-----------------------	------------	-------------------------

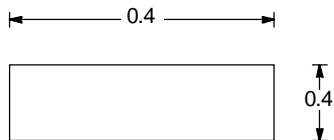


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>IPC04</b>
Job No <b>2543,GI</b>	Date <b>16-08-17 16-08-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By <b>GEL</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.60	MADE GROUND (Dark brown very gravelly very silty fine sand. Gravel of angular to subrounded fine to coarse flint and occasional concrete and brick)		0.30-1.00	B	Groundwater not encountered during drilling
	0.40 - 0.50 Cobbles of concrete		0.30	ES	
0.60-1.50	MADE GROUND (Brown slightly gravelly very silty fine sand. Gravel of subangular to subrounded flint)		0.60	ES	
		0.90	ES		
		1.20	ES		Hand pit extended from 1.2m depth with hand auger methods
					Excavation completed at 1.5m depth due to poor recovery with hand auger and continued collapse

Draft



Shoring/Support:  
Stability:

GEL AGS TP BETA 2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS 3\_1.GDT\_21-8-17

All dimensions in metres Scale 1:16.6666666666667	Method Inspection pit	Plant Used	Checked By <b>SG</b>
--	-----------------------	------------	-------------------------

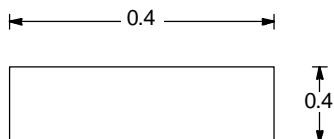


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>IPC05</b>
Job No <b>2543,GI</b>	Date <b>16-08-17 16-08-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By <b>GEL</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.80	MADE GROUND (Dark brown very gravelly very silty fine sand. Gravel of subangular to subrounded fine to coarse concrete, flint and brick)		0.30-1.00 0.30	B1B J1ES	Groundwater not encountered during drilling
			0.60	J2ES	
0.80-1.30	MADE GROUND (Brown slightly gravelly silty fine sand. Gravel of subangular to subrounded fine to coarse concrete and flint)		0.90	J3ES	Hand pit extended from 1.2m depth with hand auger methods Excavation completed at 1.3m depth due to poor recovery with hand auger and continued collapse
			1.20	J4ES	

Draft



Shoring/Support:  
Stability:

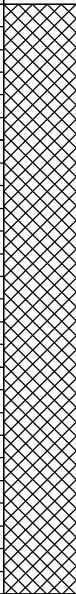
GEL AGS TP BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3\_1.GDT 21-8-17

All dimensions in metres Scale 1:16.6666666666667	Method Inspection pit	Plant Used	Checked By <b>SG</b>
--	-----------------------	------------	-------------------------

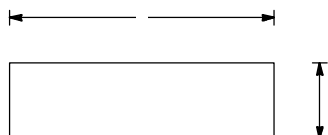


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC01</b>
Job No <b>2543,GI</b>	Date <b>03-08-17 03-08-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By <b>HOLMES</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.40	TOPSOIL (Dark brown very silty gravelly fine and medium SAND. Gravel of angular to subangular fine to coarse flint, brick, concrete and occasional wood)		0.20	J1ES	No groundwater encountered
0.40-3.00	MADE GROUND (Yellow brown and pale yellow brown mottled gravelly fine and medium SAND. Gravel of angular to subrounded fine to coarse flint)		0.55 0.60	B1B J2ES	B1 taken beneath the plate load test location for ex-situ testing purposes. Pit excavated to 0.55m and Plate Load Test undertaken.
			1.70 1.80	J3ES B2B	
			2.60 2.60	B3B J4ES	
					Trial pit completed at 3.0m.

GEL-AGS-TP-BETA\_2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS\_3\_1.GDT\_4/8/17



Shoring/Support:  
Stability:

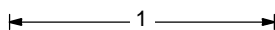
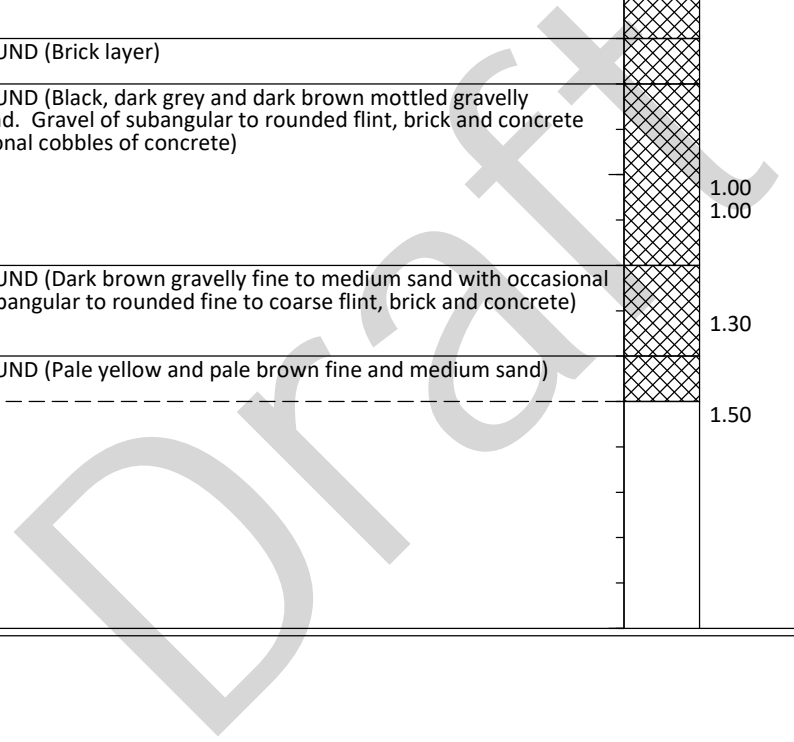
All dimensions in metres Scale 1:33.3333333333333	Method Trial Pit/trench	Plant Used	Checked By
--	-------------------------	------------	------------



### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC02</b>
Job No <b>2543,GI</b>	Date <b>17-08-17</b> <b>17-08-17</b>	Ground Level (m)	Grid Reference ( ) <b>TM 53818 93025</b>	
Fieldwork By <b>HOLMES</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.15	FLEXIBLE SURFACING				Groundwater not encountered during excavation
0.15-0.70	MADE GROUND (Dark brown slightly cobbly very silty sand and gravel. Gravel of angular to subangular fine to coarse brick, flint and concrete)		0.30	J1ES	VOC = 0ppm (peak)
0.70-0.80	MADE GROUND (Brick layer)				Plate Load Test undertaken at 0.5m depth
0.80-1.20	MADE GROUND (Black, dark grey and dark brown mottled gravelly medium sand. Gravel of subangular to rounded flint, brick and concrete with occasional cobbles of concrete)		1.00 1.00	B1 J3ES	Service encountered within the north of the pit, potential redundant drain. Service undisturbed and pit extended southwards Trial pit discontinued due to presence of communications cable at c. 1.0m depth, confirmed as redundant. Pit to be continued at a later date
1.20-1.40	MADE GROUND (Dark brown gravelly fine to medium sand with occasional gravel of subangular to rounded fine to coarse flint, brick and concrete)		1.30	J4ES	VOC = 0ppm (peak) VOC = 0ppm (peak)
1.40-1.50	MADE GROUND (Pale yellow and pale brown fine and medium sand)		1.50	J5ES	VOC = 0ppm (peak)



0.7

Shoring/Support:  
Stability:

GEL\_AGS\_TP\_BETA\_2543\_GI - LAKE LOTHING.GPJ GINT STD\_AGS 3\_1.GDT 27-9-17

All dimensions in metres Scale 1:16.6666666666667	Method Trial Pit/trench	Plant Used	Checked By <b>SG</b>
--	-------------------------	------------	-------------------------



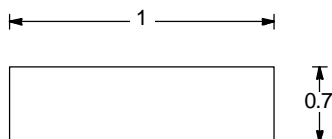


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC02</b>
Job No <b>2543,GI Lake Lothing</b>	Date <b>17-08-17</b> <b>17-08-17</b>	Ground Level (m) <b>2.80</b>	Coordinates ( ) <b>653818.141, 293025.206</b>	
Fieldwork By <b>HOLMES</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.15	FLEXIBLE SURFACING				
0.15-0.70	MADE GROUND (Dark brown slightly cobbly very silty sand and gravel. Gravel of angular to subangular fine to coarse brick, flint and concrete)		0.30	J1ES	VOC = 0ppm (peak) Plate Load Test undertaken at 0.5m depth
0.70-0.80	MADE GROUND (Brick layer)				
0.80-1.20	MADE GROUND (Black, dark grey and dark brown mottled gravelly medium sand. Gravel of subangular to rounded fine, brick and concrete with occasional cobbles of concrete)		1.00 1.00	B1B J3ES	Service encountered within the north of the pit, potential redundant drain.
1.20-1.40	MADE GROUND (Dark brown gravelly fine to medium sand with occasional gravel of subangular to rounded fine to coarse flint, brick and concrete)		1.30	J4ES	Service undisturbed and pit extended southwards
1.40-1.60	MADE GROUND (Pale yellow and pale brown fine and medium sand)		1.50	J5ES	VOC = 0ppm (peak)
1.60-2.70	Yellow brown fine SAND with occasional wood fragments		1.70 1.80	J6ES B1	VOC = 0ppm (peak) VOC = 0ppm (peak) Severe collapse of sidewalls from 1.6m bgl
			2.50	J7ES	Moderate inflow of water at 1.9 m VOC = 0ppm
			2.70	B2	Trial pit terminated at 2.7m due to severe collapse

GEL.AGS.TP.BETA.2543.GI.LAKE.LOTHING.05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK).GPJ.GINT.STD.AGS.3.1.GDT.25-4-18



Shoring/Support:  
Stability:

All dimensions in metres Scale 1:29.166666666667	Method Trial Pit/trench	Plant Used	Checked By <b>SG</b>
---	-------------------------	------------	-------------------------

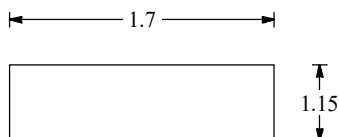


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC03</b>
Job No <b>2543,GI</b>	Date <b>03-08-17 03-08-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By <b>HOLMES</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.15	CONCRETE (pale grey no rebar)				
0.15-0.35	MADE GROUND (Dark brown silty sand and gravel with cobbles of brick. Gravel of angular to subangular fine to coarse brick, concrete and flint)				
0.35-0.60	MADE GROUND (Dark brown silty very gravelly fine to coarse sand. Gravel of angular to subrounded fine to coarse brick and concrete)		0.40	J1ES	Pit excavated to 0.5 for Plate Load test)
0.60-1.00	MADE GROUND (Pale brown fine and medium sand)		0.50	B1B	
			0.80	J2ES	
1.00-2.10	Pale yellow brown slightly gravelly fine and medium SAND. Gravel of subangular to subrounded fine to coarse flint.		1.10	B2B	Groundwater encountered from all walls of the pit - held within natural sands moderate to fast inflow of water at 1.2 m
			1.20	J3ES	
			1.80	B3B	
			2.10	D1D	
			2.10	J4ES	End of trial pit due to significant continued collapse of side walls.

GEL.AGS.TP.BETA.2543.GI - LAKE LOTHING.GPJ\_GINT STD.AGS.3\_1.GDT\_4/8/17



Shoring/Support:  
Stability:

All dimensions in metres Scale 1:33.333333333333	Method Trial Pit/trench	Plant Used	Checked By
---	-------------------------	------------	------------



### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC04</b>
Job No <b>2543,GI</b>	Date <b>03-08-17 03-08-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By <b>HOLMES</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.15	CONCRETE (Pale grey with 5mm rebar)				
0.15-0.50	MADE GROUND (Brown very silty very gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse brick, concrete and occasional flint)		0.30	J1ES	VOC = 0ppm (peak)
0.50-1.10	MADE GROUND (dark brown/black silty gravelly fine to coarse SAND with weak natural organic odour. Gravel of angular to subrounded fine to coarse brick, flint and concrete)		0.55 0.55	B1B J2ES	VOC = 0ppm (peak)
1.10-2.00	Orange brown silty slightly gravelly SAND. Gravel of fine and medium subangular to rounded flints.		1.20 1.20	B2B J3ES	VOC = 0ppm (peak)
	1.80 becoming grey with depth				
2.00-2.70	Grey/black sandy CLAY with moderate natural organic odour.		2.20 2.20	B3B J4ES	VOC = 0ppm (peak)
			2.70 2.70	B4B J5ES	VOC = 0ppm (peak) Pit aborted at 2.7m due to significant collapse of sidewalls

2.1



1

Shoring/Support:  
Stability:

GEL AGS TP BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 16/8/17

All dimensions in metres Scale 1:29.166666666667	Method Trial Pit/trench	Plant Used	Checked By
---	-------------------------	------------	------------



### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC05</b>
Job No <b>2543,GI</b>	Date <b>31-07-17 31-07-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By		Logged By <b>JG</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.15	CONCRETE				
0.15-0.25	MADE GROUND (Orange brown gravelly coarse sand. Gravel of subangular to subrounded fine to coarse flint and concrete)		0.30	1J	VOC = 1.0 ppm (peak)
0.25-1.10			0.50	1B 2J	VOC = 5.0 ppm (peak)
1.10-2.30	Grey brown sandy CLAY with weak natural organic odour and pockets of yellow brown sand		1.00	2B	VOC = 2.0 ppm (peak)
			1.00	3J	VOC = 1.0 ppm (peak)
			1.10	3B	
			1.10	4J	VOC = 1.0 ppm (peak)
			1.30	5J	Slow seepage inflow of water at 1.3 m Continued collapse from 1.5m depth
					Slow seepage inflow of water at 2 m
2.30-2.80	Dark grey slightly gravelly CLAY. Gravel of subangular to subrounded fine to medium chalk		2.30	4B	VOC = 1.0 ppm (peak)
			2.30	6J	
2.80-3.10	Grey slightly gravelly medium to coarse SAND. Gravel of subrounded fine and medium flint		2.90	5B	VOC = 0.0 ppm
			2.90	7J	
					Trial pit completed at 3.1m depth

2.5



1.2

Shoring/Support: None  
Stability:

GEL-AGS-TP-BETA\_2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS 3\_1.GDT\_1-8-17

All dimensions in metres Scale 1:29.166666666667	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By SG
---	-------------------------	------------------------------------	------------------

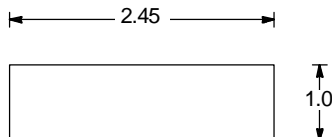


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC06</b>
Job No <b>2543,GI</b>	Date <b>01-08-17 01-08-17</b>	Ground Level (m) <b>2.43</b>	Grid Reference ( )	
Fieldwork By		Logged By <b>JG</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	CONCRETE (with 5mm diameter rebar)				
0.20-0.70	MADE GROUND (Brown grey gravelly fine to coarse sand. Gravel of angular fine and medium flint, brick concrete)		0.30	1J	
	0.60 Redundant 20mm black pipe encountered				
0.70-0.90	MADE GROUND (Black slightly gravelly silty fine to coarse sand. Gravel of subangular to angular fine brick)		0.70 0.70	1B 2J	
0.90-1.90	Olive brown silty fine SAND		1.10 1.10	2B 3J	
	1.50 Becoming slightly darker in colour with depth				Significant collapse of sidewalls to 1.5m depth
1.90-3.20	Black and dark grey CLAY with moderate natural organic odour		2.00 2.00	3B 4J	Slow seepage inflow of water at 1.9 m
			3.20 3.20	4B 5J	Trial pit completed at 3.2m depth

Draft Only



Shoring/Support: None  
Stability:

GEL.AGS.TP.BETA.2543.GI - LAKE LOTHING.GPJ\_GINT STD.AGS.3\_1.GDT\_1-8-17

All dimensions in metres Scale 1:29.1666666666667	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By SG
--	-------------------------	------------------------------------	------------------



### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC07</b>
Job No <b>2543,GI</b>	Date <b>21-09-17 21-09-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	CONCRETE (Pale grey, 5mm diameter rebar)				
0.20-0.40	MADE GROUND (Orange brown silty sand and gravel. Gravel of angular to subrounded fine to coarse flint and occasional brick)		0.30	J1ES	VOC = 0ppm (peak)
0.40-0.55	MADE GROUND (Black silty sand and gravel. Gravel of angular to subrounded fine to coarse brick, clinker and flint)		0.45	J2ES	VOC = 0ppm (peak)
0.55-1.40	MADE GROUND (Orange brown slightly gravelly fine to medium sand with occasional brown mottling. Gravel of subangular to subrounded fine to coarse flint and occasional brick fragments)		0.90	J3ES	VOC = 0ppm (peak)
			1.00	B1	Moderate inflow of water at 1 m
1.40-1.50	Dark grey very sandy slightly gravelly CLAY. Gravel of subangular to subrounded fine to coarse flint		1.50	D1	Trial pit aborted at 1.4m depth due to significant collapse of sidewalls VOC = 0ppm (peak)
			1.50	J4ES	

Draft

GEL\_AGS\_TP\_BETA\_2543,GI - LAKE LOTHING.GPJ GINT STD\_AGS 3\_1.GDT 27-9-17

2.1



0.9

Shoring/Support:  
Stability:

All dimensions in metres Scale 1:16.6666666666667	Method Trial Pit/trench	Plant Used	Checked By <b>SG</b>
--	-------------------------	------------	-------------------------

### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC08</b>
Job No <b>2543,GI</b>	Date <b>21-09-17</b> <b>21-09-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	CONCRETE (Pale grey, 5mm diameter rebar)				
0.20-0.30	MADE GROUND (Orange brown silty sand and gravel. Gravel of angular to subrounded fine to coarse flint, concrete and occasional brick)		0.25	J1ES	
0.30-0.40			0.30	J2ES	
0.40-0.80	MADE GROUND (Black and dark grey gravelly clayey fine to coarse sand. Gravel of angular to subrounded fine to coarse flint, brick and concrete)		0.50	J3ES	
0.80-2.50	MADE GROUND (Dark brown and black mottled fine to coarse sand with occasional fine to coarse subrounded to rounded flint gravel and moderate natural organic odour)		1.00	B1	
			1.00	J4ES	
			1.60	J5ES	Moderate seepage inflow of water at 1.6 m
			2.00	B2	
	2.00	J6ES			
Trial pit aborted at 2.5m depth due to significant collapse of sidewalls					

Draft

GEL AGS TP BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3\_1.GDT 27-9-17

3.0



0.9

Shoring/Support:  
Stability:

All dimensions in metres Scale 1:25	Method Trial Pit/trench	Plant Used	Checked By <b>SG</b>
--	-------------------------	------------	-------------------------

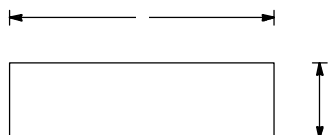
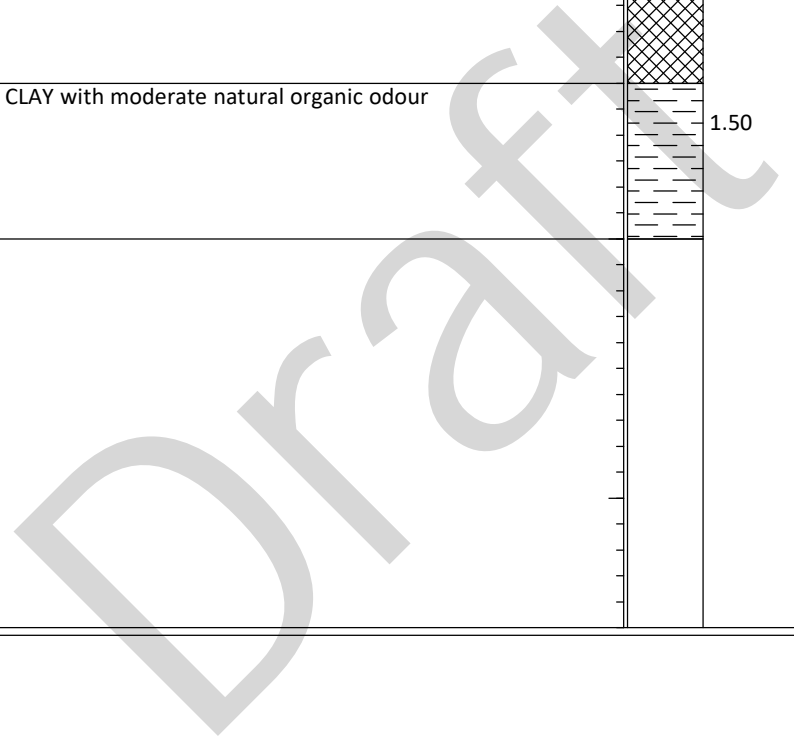


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC09</b>
Job No <b>2543,GI Lake Lothing</b>	Date <b>23-04-18 23-04-08</b>	Ground Level (m)	Coordinates ( )	
Fieldwork By		Logged By <b>JG</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.50	MADE GROUND (Dark brown and black gravelly fine and medium SAND. Gravel of subangular to subrounded fine and medium clinker, brick and flint)		0.20	J1ES	VOC = 0ppm
0.50-1.40	MADE GROUND (Orange brown gravelly fine and medium SAND. Gravel of subangular to rounded fine and medium flint and occasional clinker)		0.60	J2ES	VOC = 0ppm
1.40-2.00	Grey brown CLAY with moderate natural organic odour		1.50	J3ES	VOC = 0ppm Moderate inflow of water at 1.6 m
					Trial pit terminated at 2.0m bgl due to severe collapse

GEL AGS TP BETA 2543,GI - LAKE LOTHING, 05-12-17 (CONFLICT COPY FROM STEPHEN@GEOSPHERE-ENVIRONMENTAL.CO.UK),GPJ - GINT STD AGS 3, 1.GDT, 25-4-18



Shoring/Support:  
Stability:

All dimensions in metres Scale 1:29.1666666666667	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By LF
--	-------------------------	------------------------------------	------------------

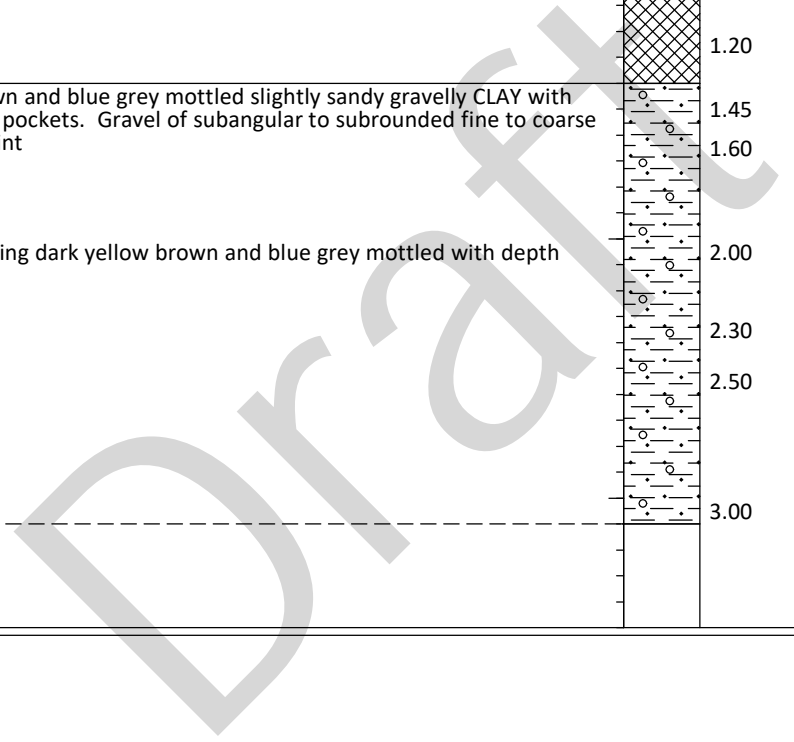




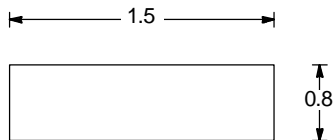
### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC21</b>
Job No <b>2543,GI</b>	Date <b>17-08-17</b> <b>17-08-17</b>	Ground Level (m)	Grid Reference ( ) <b>TM 53780 92650</b>	
Fieldwork By <b>HOLMES</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.05	FLEXIBLE SURFACING	[Cross-hatch pattern]			
0.05-0.15	MADE GROUND (Black and dark brown silty sand and gravel. Gravel of angular to subangular fine to coarse flint, clinker and brick)	[Cross-hatch pattern]	0.10	J1ES	No significant collapse of sidewalls VOC = 0ppm (peak)
0.15-0.70			0.25	J2ES	
	MADE GROUND (Pale brown very silty very gravelly fine and medium sand. Gravel of angular to subangular fine to coarse brick, flint, concrete and clinker)	[Cross-hatch pattern]	0.50	B1	Plate bearing test undertaken at 0.5m depth
0.70-1.40			0.80	J3ES	
	MADE GROUND (Dark brown very sandy clay with natural organic odour)	[Cross-hatch pattern]	1.20	B2	
1.40-3.10			1.45	J4ES	
	Yellow brown and blue grey mottled slightly sandy gravelly CLAY with clayey sand pockets. Gravel of subangular to subrounded fine to coarse chalk and flint	[Dotted pattern]	1.60	D1	
			2.00	B3	Moderate seepage inflow of water at 2 m
	2.00 Becoming dark yellow brown and blue grey mottled with depth	[Dotted pattern]	2.30	J5ES	
			2.50	D2	
			3.00	B4	Fast seepage inflow of water at 3 m Trial pit completed at 3.1m depth



GEL-AGS-TP-BETA\_2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS\_3\_1.GDT\_23-8-17



Shoring/Support:  
Stability:

All dimensions in metres Scale 1:29.1666666666667	Method Trial Pit/trench	Plant Used	Checked By <b>SG</b>
--	-------------------------	------------	-------------------------

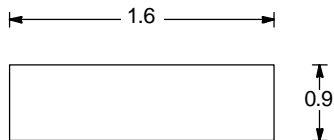


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC22</b>
Job No <b>2543,GI</b>	Date <b>17-08-17 17-08-17</b>	Ground Level (m)	Grid Reference ( ) <b>TM 53820 92612</b>	
Fieldwork By <b>HOLMES</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.35	MADE GROUND (Dark brown very gravelly very silty fine sand. Gravel of angular to subrounded fine to coarse flint, clinker, brick and fragments of clay pipe)				Groundwater not encountered during excavation
0.35-1.10	POTENTIAL MADE GROUND (Pale brown gravelly fine and medium sand. Gravel of angular to subrounded fine to coarse flint)		0.30	J1ES	VOC = 0ppm (peak)
			0.50	B1	Plate bearing test undertaken at 0.5m depth
			0.60	J2ES	
1.10-3.00	Orange brown and pale brown mottled gravelly fine and medium SAND with occasional pockets of dark orange brown sand. Gravel of angular to subrounded fine to coarse flint		1.20	J3ES	
			1.50	B2	
			2.10	J4ES	
			2.60	B3	
			3.00	B4	Trial pit completed at 3.0m depth
			3.00	J5ES	

Draft



Shoring/Support:  
Stability:

GEL-AGS-TP-BETA\_2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS 3\_1.GDT\_23-8-17

All dimensions in metres Scale 1:29.166666666667	Method Trial Pit/trench	Plant Used	Checked By <b>SG</b>
---	-------------------------	------------	-------------------------



### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC23</b>
Job No <b>2543,GI</b>	Date <b>17-08-17</b> <b>17-08-17</b>	Ground Level (m)	Grid Reference () <b>TM 53812 92579</b>	
Fieldwork By <b>HOLMES</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-2.00	MADE GROUND (Pale brown very gravelly very silty fine and medium sand. Gravel of angular to subangular fine to coarse brick, concrete, flint and glass. Fragment of potential asbestos containing material encountered) 0.40 Becoming dark brown with depth 0.60 Cobbles of concrete with rebar (20mm diameter) and brick 0.70 Layers of ash, clinker and burnt ground		0.30	J1ES	Groundwater not encountered during excavation VOC = 0ppm (peak)
			0.50	B1	Plate bearing test undertaken at 0.5m depth
			0.60	J2ES	
			1.00	J3ES	
			1.50	B2	
2.00-2.50	MADE GROUND (Dark brown slightly gravelly slightly clayey fine and medium sand. Gravel of angular to subrounded fine to coarse brick, concrete, flint, glass and wood)		2.00	J4ES	
			2.40	B3	
2.50-3.10	POTENTIAL MADE GROUND (Orange brown fine and medium sand)		2.60	J5ES	
			3.00	B4	Trial pit completed at 3.1m depth

1.5



Shoring/Support:  
Stability:

GEL-AGS-TP-BETA\_2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS 3\_1.GDT\_23-8-17

All dimensions in metres Scale 1:29.1666666666667	Method Trial Pit/trench	Plant Used	Checked By <b>SG</b>
--	-------------------------	------------	-------------------------

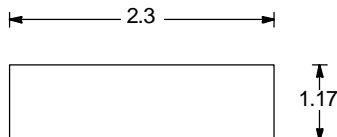


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC101</b>
Job No <b>2543,GI</b>	Date <b>01-08-17</b> <b>01-08-17</b>	Ground Level (m) <b>2.54</b>	Grid Reference ( )	
Fieldwork By		Logged By <b>JG</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	CONCRETE (with 5mm rebar)				
0.20-0.60	MADE GROUND (Orange brown silty sand and gravel. Gravel of subangular to angular fine to medium brick, concrete and flint)		0.30	J1+B1ES	
0.60-2.05	MADE GROUND (Pale yellow brown gravelly fine and medium sand. Gravel of fine and medium angular to subrounded brick and flint)		0.80	J2+B2ES	
	1.50 Becoming fine grained and less gravelly with depth				
			1.80	J3+B3ES	Significant collapse of sidewalls to 1.6m depth Moderate inflow of water at 1.65 m
					Trial pit completed at 2.05m depth

Draft Only



Shoring/Support: None  
Stability:

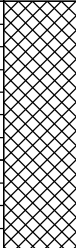
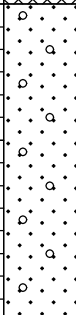
GEL.AGS.TP.BETA.2543.GI - LAKE LOTHING.GPJ\_GINT STD.AGS.3\_1.GDT\_1-8-17

All dimensions in metres Scale 1:29.1666666666667	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By SG
--	-------------------------	------------------------------------	------------------

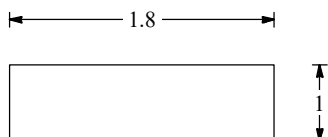


### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC102</b>
Job No <b>2543,GI</b>	Date <b>04-08-17 04-08-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By <b>HOLMES</b>		Logged By <b>LF</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown silty slightly gravelly fine to coarse sand with rootlets. Gravel of subrounded and angular fine to coarse flint)				
0.30-1.40	MADE GROUND (Orange brown with occasional pale brown mottling slightly gravelly fine and medium sand. Gravel of subrounded to subangular fine to coarse flint)		0.20	J1	VOC= 0ppm (peak)
			0.50 0.50	B1 J2	VOC= 0ppm (peak)
1.40-2.80	Pale yellow brown slightly gravelly medium SAND. Gravel of subangular to subrounded fine to coarse flint.		1.60	B2	VOC= 0ppm (peak)
			1.60	J3	
			2.40 2.40	B3 J4	VOC= 0ppm (peak)
			2.80 2.80	B4 J5	slow inflow of water at 2.7 m VOC= 0ppm (peak) End of trial pit due to collapse of sidewalls.

GEL-AGS-TP-BETA\_2543,GI - LAKE LOTHING.GPJ\_GINT STD AGS 3\_1.GDT\_4/8/17



Shoring/Support:  
Stability:

All dimensions in metres Scale 1:33.33333333333333	Method Trial Pit/trench	Plant Used	Checked By
---	-------------------------	------------	------------



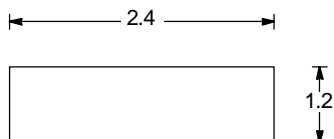
### TRIAL PIT LOG

Project <b>Lake Lothing</b>		Client <b>Suffolk County Council</b>		TRIAL PIT No <b>TPC103</b>
Job No <b>2543,GI</b>	Date <b>31-07-17</b> <b>31-07-17</b>	Ground Level (m)	Grid Reference ( )	
Fieldwork By		Logged By <b>JG</b>		Sheet <b>1 of 1</b>

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	CONCRETE				
0.20-0.30	MADE GROUND (Orange brown silty sand and gravel of subangular to subrounded fine to coarse flint)		0.30	1J	VOC = 0.0 ppm
0.30-1.20			0.50	1B	VOC = 1.0 ppm (peak)
	MADE GROUND (Black silty gravelly fine to coarse sand with moderate natural organic odour and burning odour. Gravel of angular to subangular fine to coarse flint, brick, concrete and occasional slate)		0.50	2J	
			1.10	2B	VOC = 0.0 ppm
	MADE GROUND (Dark brown fine and medium sand with moderate to strong sulphurous odour)		1.10	3J	
			1.50	3B	Significant collapse of sidewalls
	MADE GROUND (Dark brown fine and medium sand with moderate to strong sulphurous odour)		1.50	4J	Slow seepage inflow of water at 1.45 m
			1.78	1W	VOC = 0.0 ppm
	Pale brown fine SAND with weak to moderate sulphurous odour		2.00	4B	VOC = 0.0 ppm
			2.00	5J	
					Trial pit aborted due to significant collapse of sidewalls

Draft Only

GEL.AGS.TP.BETA.2543.GI - LAKE LOTHING.GPJ\_GINT STD.AGS.3\_1.GDT\_1-8-17



Shoring/Support: None  
Stability:

All dimensions in metres Scale 1:29.1666666666667	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By SG
--	-------------------------	------------------------------------	------------------

GEL AGS BH BETA 2543, GI - LAKE LOTHING.GPJ GINT STD AGS 3\_1.GDT 18/10/17

CLIENT: Suffolk County Council				PROJECT: Lake Lothing				GROUND LEVEL m				HOLE No. WSC05													
LOGGED BY: SG		CHECKED BY: SG		EXCAVATION METHOD: Windowless sampler				GRID REFERENCE:				SHEET 1 OF 1													
FIELDWORK BY: DRILLT		DATE: 18/10/2017		Uncased to 5.0 m				DATES 03/10/2017 - 17/10/2017				PROJECT NO. 2543,GI													
TEMPLATE REF: GEL AGS BH BETA		Additional Tests and Notes																							
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing								
								SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>		
								0	10	20	30	40													
				CONCRETE			0.00						0												Hand dug starter pit from ground level to 1.2m
				MADE GROUND (Orange brown gravelly fine to medium sand. Gravel of fine to coarse subrounded to rounded flint and concrete)			0.20						0.25	J	1										VOC = 0ppm
				MADE GROUND (Dark grey/black gravelly fine to medium sand. Gravel of fine to coarse angular to rounded concrete, flint, charcoal and clinker)			0.50						0.40	J+D	2										VOC = 0ppm
				Pale brown/yellow grey brown slightly gravelly fine to medium SAND. Gravel of fine to medium subrounded to rounded flint and chert			0.85						0.60	J+D	3										VOC = 0ppm
		1.15											1.00	J+D	4										VOC = 0ppm
													1.50	J	4										Fast inflow of water at 1.15m Partial collapse of sidewalls to 1.3m VOC=7ppm (peak)
				1.80 Becoming organic black with depth																					
				Black/pale grey mottled organic CLAY			1.95																		
													2.50	J	5										VOC=486ppm (peak)
													3												
				3.35 With a parting of silty fine sand (50mm)																					
				Dark red brown silty fine SAND			3.50						3.50	J	6										VOC=72ppm (peak)
				3.80 Becoming dark grey yellow brown with depth																					
				4.00 Becoming pale grey with depth									4.00	4	B	1									
							5.00						5												
																									Borehole completed at 5.0m. No further progress as too dense/blowing sands

\*WATER Standing water level  
 Water strikes  
 PIEZOMETER

Upper seal  
 Response zone  
 Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test  
 Blows SPT blows for each 75mm increment  
 SPT N (35) Undisturbed sample blow count  
 N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
 Brightwell Barns, Ipswich Road  
 Brightwell, Suffolk, IP10 BJ  
 Telephone: 01603 298076

PROJECT No  
 2543,GI  
 SHEET  
 1 OF 1  
 HOLE No.  
 WSC05

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. WSC14</b>	
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Windowless sampler Uncased to 5.0 m		Coordinates:	
				DATES 02-Nov-17 - 02-Nov-17		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>
							0	10	20	30	40												
				MADE GROUND (Dark brown slightly silty gravelly fine to coarse sand. Gravel of angular to subrounded fine to coarse flint, concrete and brick)		0.00						0											
												0.30	ES	J1									
												1.00	ES	J2									
				MADE GROUND (Pale yellow brown and brown mottled slightly gravelly fine to coarse sand. Gravel of angular to subangular fine to coarse flint, brick and tile)		1.50						1.70	ES	J3									
				Pale yellow brown fine and medium SAND with occasional orange brown horizons		2.00						2.30	ES	J4									
												3											
				3.80 Pocket of dark grey sand with moderate natural organic odour		4.00						3.80	ES	J5									
				Orange brown slightly clayey fine and medium SAND		4.20						4.20	ES	J6									
				Orange brown fine and medium SAND with bands of gravel of subrounded fine and medium flint		4.50																	
				Orange brown very sandy CLAY		4.90																	
						5.00																	

Blowing sands encountered at 5.0m, borehole backfilled to 4.0m depth

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 3-11-17

*WATER	Standing water level	PIEZOMETER		Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
	Water strikes			Response zone		B Bulk disturbed sample	C Cone penetration test	SPT N	(35) Undisturbed sample blow count
				Lower seal		U Undisturbed sample	K Permeability test		N = SPT N value (blows after seating)
						P Piston sample			N*120 = Total blows/penetration including seating
						J Disturbed jar sample			<425 Sample % passing 425 micron sieve
						ES Environmental soil sample			
						W Water Sample			

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
1 OF 1  
HOLE No.  
WSC14



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. WSC16</b>		
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Windowless sampler Uncased to 1.1 m			Coordinates:			SHEET 1 OF 1
							DATES 31-Oct-17 - 31-Oct-17			PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>
							0	10	20	30	40													
				MADE GROUND (Orange brown gravelly fine to coarse sand. Gravel of angular to subrounded fine to coarse flint, concrete and brick)		0.00						0												Groundwater not encountered during excavation
				MADE GROUND (Orange brown and pale brown mottled fine and medium sand)		0.70						0.40	ES	J1										
				CONCRETE		1.00 1.10						0.80	ES	J2									Hand pit aborted at 1.0m depth due to obstruction	
												1												

<p>*WATER  Standing water level  PIEZOMETER</p> <p> Water strikes</p>	<p> Upper seal</p> <p> Response zone</p> <p> Lower seal</p>	<p>SAMPLE AND TEST KEY</p> <p>D Small disturbed sample</p> <p>B Bulk disturbed sample</p> <p>U Undisturbed sample</p> <p>P Piston sample</p> <p>J Disturbed jar sample</p> <p>ES Environmental soil sample</p> <p>W Water Sample</p>	<p>S Standard penetration test</p> <p>C Cone penetration test</p> <p>K Permeability test</p>	<p>Blows SPT N</p> <p>SPT N = SPT N value (blows after seating)</p> <p>N*120 = Total blows/penetration including seating</p> <p>&lt;425 Sample % passing 425 micron sieve</p>	Geosphere Environmental	<p>PROJECT No 2543,GI</p> <p>SHEET 1 OF 1</p> <p>HOLE No. WSC16</p>
---	---	--	--	---	-------------------------	---

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 3-11-17

DEPTH All depths, level and thicknesses in metres

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. WSC16a**  
 LOGGED BY: LF      CHECKED BY: SG      EXCAVATION METHOD: Windowless sampler      **Coordinates:**      **SHEET 1 OF 1**  
 FIELDWORK BY: DRILLT      DATE:      Uncased to 1.1 m      **DATES 31-Oct-17 - 31-Oct-17**      **PROJECT NO. 2543,GI**  
 TEMPLATE REF: GEL AGS BH BETA

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m <sup>3</sup>
							0	10	20	30	40												
				MADE GROUND (Orange brown gravelly fine to coarse sand. Gravel of angular to subrounded fine to coarse flint, concrete and brick)		0.00						0											Groundwater not encountered during excavation
				MADE GROUND (Orange brown and pale brown mottled fine and medium sand)		0.70						0.30	ES	J1									
				CONCRETE		1.00 1.10						0.70	ES	J2									
												1											
												2											
												3											
												4											
												5											

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 3-11-17

\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample    C Cone penetration test    N = SPT N value (blows after seating)  
 U Undisturbed sample    K Permeability test    SPT N N\*120 = Total blows/penetration including seating  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

**DEPTH** All depths, level and thicknesses in metres



**PROJECT No**  
2543,GI  
**SHEET**  
1 OF 1  
**HOLE No.**  
WSC16a

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>		<b>HOLE No. WSC17</b>	
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m		Coordinates:	
				DATES 30-Oct-17 - 30-Oct-17		PROJECT NO. 2543,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
						Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>
								0	10	20	30	40												
				TOPSOIL (Dark brown slightly gravelly fine to coarse sand. Gravel of angular to subrounded fine to coarse flint and occasional brick)		0.00							0											
				MADE GROUND (Dark orange brown slightly gravelly fine to coarse sand. Gravel of subangular to rounded fine to coarse flint)	XXXX	0.30							0.10	ES	J1									
				Orange brown slightly gravelly fine and medium SAND with occasional pale orange brown pockets of subangular to rounded fine to coarse flint	o	0.45							0.40	ES	J2									
				Orange brown slightly gravelly fine and medium SAND with occasional pale orange brown pockets of subangular to rounded fine to coarse flint	o								0.60	ES	J3									
				Orange brown and pale grey mottled slightly clayey fine and medium SAND	o	1.10							1.10	ES	J4									
				Orange brown and pale brown mottled slightly clayey fine and medium SAND with frequent pockets of sandy clay	o	1.40							1.60	ES	J5									
				Stiff dark brown grey CLAY	o	1.90							2											
				Stiff dark grey very gravelly CLAY. Gravel of subangular to subrounded fine to coarse chalk and occasional flint	o	2.50							2.50	ES	J6									
													3											
													3.50	ES	J7									
				Orange brown fine and medium SAND	o	3.70																		
						4.00							4											
													5											

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 3-11-17

30-10 +10 mins      3.70 2.90

Inflow of water at 3.7m

Blowing sands encountered at 4.0m, borehole backfilled to 3.0m depth

\*WATER Standing water level      PIEZOMETER  
Water strikes

Upper seal      SAMPLE AND TEST KEY      D Small disturbed sample      S Standard penetration test      Blows      SPT blows for each 75mm increment  
Response zone      B Bulk disturbed sample      C Cone penetration test      SPT N      (35) Undisturbed sample blow count  
Lower seal      U Undisturbed sample      K Permeability test           N = SPT N value (blows after seating)  
P Piston sample      J Disturbed jar sample                     N\*120 = Total blows/penetration including seating  
ES Environmental soil sample      W Water Sample                     <425      Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

**Geosphere Environmental**

PROJECT No. 2543,GI  
SHEET 1 OF 1  
HOLE No. WSC17

**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. WSC19a(1)**  
 LOGGED BY: LF      CHECKED BY: LF      EXCAVATION METHOD: Windowless sampler      Coordinates: ,  
 FIELDWORK BY: GEL      DATE:      Uncased to 4.0 m      DATES 02-Jan-18 - 02-Jan-18  
 TEMPLATE REF: GEL AGS BH BETA      PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>
							0	10	20	30	40												
				TOPSOIL (Dark brown silty fine to coarse sand with occasional angular to subrounded fine and medium brick and flint)		0.00						0											
				MADE GROUND (Pale brown slightly gravelly fine and medium sand. Gravel of subangular to subrounded fine and medium flint)	▨	0.60						0.35	ES	J1									VOC = 0ppm
				Pale brown slightly gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint	▨	1.00						0.80	ES	J2									VOC = 0ppm
				1.50 - 1.60 Band of gravelly sand	▨	1.40						1	ES	J3									VOC = 0ppm
				2.90 - 3.00 Band of gravelly sand	▨	2.40						2											
				Orange brown gravelly medium SAND. Gravel of subangular to subrounded fine to coarse flint	▨	3.00						2.40	ES	J4									VOC = 2ppm (peak) Borehole collapsed to 2.65m bgl
		3.50		3.50 - 3.60 Band of coarse flint gravel	▨	3.50						3											
						4.00						3.50	ES	J5									Seepage inflow of water at 3.5m VOC = 0ppm
												4											Borehole aborted at 4.0m due to continued collapse from 3.0m to 4.0m bgl
												5											

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17.GPJ GINT STD AGS 3 1.GDT 3-1-18


\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample    C Cone penetration test    (35) Undisturbed sample blow count  
 U Undisturbed sample    K Permeability test    SPT N N = SPT N value (blows after seating)  
 P Piston sample    N\*120 = Total blows/penetration including seating  
 J Disturbed jar sample    <425 Sample % passing 425 micron sieve  
 ES Environmental soil sample  
 W Water Sample

DEPTH All depths, level and thicknesses in metres



Geosphere Environmental

**PROJECT No.**  
2543,GI

**SHEET**  
1 OF 1

**HOLE No.**  
WSC19a(1)

CLIENT: Suffolk County Council		PROJECT: Lake Lothing		GROUND LEVEL m			HOLE No. WSC19																
LOGGED BY: LF		CHECKED BY: SG		EXCAVATION METHOD: Windowless sampler			Coordinates:																
FIELDWORK BY: DRILLT		DATE:		Uncased to 0.8 m			DATES 01-Nov-17 - 01-Nov-17																
TEMPLATE REF: GEL AGS BH BETA								PROJECT NO. 2543,GI															
Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m <sup>3</sup>
							0	10	20	30	40	0											
				TOPSOIL (Dark brown silty gravelly fine to coarse sand with rootlets. Gravel of angular to subangular fine to coarse brick, flint, concrete, metal and clinker)		0.00						0											
				MADE GROUND (Dark brown very silty gravelly fine to coarse sand. Gravel of angular to subangular fine to coarse flint, brick, metal and clinker)	[diagonal lines]	0.50						0.30	ES	J1									
				CONCRETE	[cross-hatch]	0.75 0.80						0.60	ES	J2									
												1											
												2											
												3											
												4											
												5											

Hand pit aborted at 0.75m due to obstructio

\*WATER Standing water level  
 Water strikes

PIEZOMETER

Upper seal   
 Response zone   
 Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 Blows SPT N  
 <425 Sample % passing 425 micron sieve

SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental

PROJECT No  
**2543,GI**

SHEET  
**1 OF 1**

HOLE No.  
**WSC19**

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 3-11-17



**CLIENT: Suffolk County Council**      **PROJECT: Lake Lothing**      **GROUND LEVEL m**      **HOLE No. WSC21**  
 LOGGED BY: LF      CHECKED BY: LF      EXCAVATION METHOD: Windowless sampler      Coordinates: ,  
 FIELDWORK BY: GEL      DATE:      Uncased to 3.2 m      DATES 02-Jan-18 - 02-Jan-18      SHEET 1 OF 1  
 TEMPLATE REF: GEL AGS BH BETA      PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	
							0	10	20	30	40											
				FLEXIBLE SURFACING		0.00						0										
				MADE GROUND (Brown silty gravelly fine to coarse sand. Gravel of angular to subangular fine to coarse flint and occasional brick)		0.20						0.35	ES	J1								VOC = 0ppm
				MADE GROUND (Yellow brown silty gravelly medium sand. Gravel of subangular to subrounded fine to coarse flint)		0.50						0.75	ES	J2								VOC = 0ppm
				Yellow brown fine and medium SAND with bands of dark orange brown sand		1.50						1.75	ES	J3								VOC = 0ppm
				Brown clayey fine and medium SAND with occasional dark orange brown bands		2.00						2.25	ES	J4								VOC = 0ppm
				Pale yellow brown fine and medium SAND with occasional dark orange brown veining		2.40						2.65	ES	J5								Borehole collapsed to 2.5m bgl VOC = 0ppm
		3.00				3.20						3										Inflow of water at 3m Refusal encountered at 3.2m bgl

GEL AGS BH BETA 2543,GI - LAKE LOTHING, 05-12-17.GPJ GINT STD AGS 3 1.GDT 3-1-18

\*WATER Standing water level    PIEZOMETER  
 Water strikes

Upper seal    Response zone    Lower seal

**SAMPLE AND TEST KEY**  
 D Small disturbed sample    S Standard penetration test    Blows SPT blows for each 75mm increment  
 B Bulk disturbed sample    C Cone penetration test    (35) Undisturbed sample blow count  
 U Undisturbed sample    K Permeability test    SPT N N = SPT N value (blows after seating)  
 P Piston sample    N\*120 = Total blows/penetration including seating  
 J Disturbed jar sample    <425 Sample % passing 425 micron sieve  
 ES Environmental soil sample    W Water Sample

DEPTH All depths, level and thicknesses in metres



**PROJECT No.**  
2543,GI  
**SHEET**  
1 OF 1  
**HOLE No.**  
WSC21

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>			<b>HOLE No. WSC22</b>		
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Windowless sampler Uncased to 4.5 m			Coordinates:		
							DATES 01-Nov-17 - 01-Nov-17		
							PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
						Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	
								0	10	20	30	40											
				FLEXIBLE SURFACING		0.00									0								
				MADE GROUND (Dark orange brown very gravelly fine to coarse sand. Gravel of angular to subrounded fine to coarse brick, flint and concrete)		0.05									0.20	ES	J1						
				MADE GROUND (Orange brown fine and medium sand with occasional fine to coarse flint)		0.30									0.50	ES	J2						
				Orange brown and pale brown mottled slightly silty fine and medium SAND		1.10									1.20	ES	J3						
				Orange brown and pale grey mottled very sandy CLAY		1.70									1.80	ES	J4						
				2.00 Orange brown horizons present with depth											2.50		D1						
				Orange brown and pale grey mottled slightly clayey fine and medium SAND		3.00									3.30	ES	J5						
		4.00		3.90 - 4.00 Pocket of dark orange brown slightly gravelly medium sand		4.00									4.20	ES	J6						
				Orange fine and medium SAND		4.50																	

Inflow of water at 4m  
Blowing sands encountered at 4.5m depth,  
borehole backfilled to 3.7m

Borehole aborted at 4.5m depth due to refusal

*WATER	▽ Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
▽	Water strikes		Response zone	B Bulk disturbed sample	C Cone penetration test	SPT N	(35) Undisturbed sample blow count	
			Lower seal	U Undisturbed sample	K Permeability test		N = SPT N value (blows after seating)	
				P Piston sample			N*120 = Total blows/penetration including seating	
				J Disturbed jar sample			<425 Sample % passing 425 micron sieve	
				ES Environmental soil sample				
				W Water Sample				

DEPTH All depths, level and thicknesses in metres



PROJECT No  
2543,GI  
SHEET  
1 OF 1  
HOLE No.  
WSC22

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 3-11-17



<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>			<b>HOLE No. WSC23</b>		
LOGGED BY: SG FIELDWORK BY: TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m			Coordinates:		
							DATES 09/11/2017 - 09/11/2017		
							PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
						Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>		Cu kN/m <sup>2</sup>
								0	10	20	30	40												
				MADE GROUND (Asphalt)	XXXXXX		0.00							0										
				MADE GROUND (Black type one)	XXXXXX		0.10																	
				MADE GROUND (Asphalt)	XXXXXX		0.20																	
				MADE GROUND (Black type one)	XXXXXX		0.33																	
				MADE GROUND (Multicoloured gravelly cobbly sand. Gravel and cobbles of red brick)	XXXXXX		0.43						0.50	D	1									
				Dark red brown silty fine SAND	XXXXXX		0.70						0.80	J	2									
				1.00 Becoming dark yellow brown with frequent dark red brown staining with depth	XXXXXX								1.10	J	3									
				1.50 - 1.65 With a parting of pale grey silty fine sand	XXXXXX																			
				Dark orange brown/yellow brown mottled very silty sandy CLAY. Sand is fine. Frequent bands of silty fine sand	XXXXXX		1.65						2											
					XXXXXX								2.20	J	4									
		2.50		Dark yellow brown silty fine SAND with frequent dark orange brown mottling	XXXXXX		2.65						3											Inflow of water at 2.5m
					XXXXXX								3.20	J	5									
				3.85 With a dark red brown band	XXXXXX								4											
					XXXXXX		4.00						4											Windowless sample hole completed at 4.0m

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 9/11/17

\*WATER Standing water level PIEZOMETER

Upper seal

Response zone

Lower seal

**SAMPLE AND TEST KEY**

D Small disturbed sample

B Bulk disturbed sample

U Undisturbed sample

P Piston sample

J Disturbed jar sample

ES Environmental soil sample

W Water Sample

S Standard penetration test

C Cone penetration test

K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count

SPT N N = SPT N value (blows after seating)

<425 N\*120 = Total blows/penetration including seating

Sample % passing 425 micron sieve

**Geosphere Environmental Ltd**  
 Brightwell Barns, Ipswich Road  
 Brightwell, Suffolk, IP10 BJ  
 Telephone: 01603 298076

**PROJECT No**  
2543,GI

**SHEET**  
1 OF 1

**HOLE No.**  
WSC23

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>		<b>GROUND LEVEL m</b>			<b>HOLE No. BHC28</b>		
LOGGED BY: SG		CHECKED BY:		EXCAVATION METHOD: Windowless sampler			GRID REFERENCE:		
FIELDWORK BY: DRILLT		DATE:		Uncased to 4.0 m			DATES 12/10/2017 - 13/10/2017		
TEMPLATE REF: GEL AGS BH BETA							PROJECT NO. 2543,GI		

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
								SPT 'N' Value					SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>							
										Blows	Type	No.														
				CONCRETE			0.00																			
				MADE GROUND (Orange brown slightly clayey sand & gravel of fine to coarse angular to subrounded flint, concrete and occasional brick fragments)			0.18																			
				CONCRETE			0.28																			
				CONCRETE (Concrete recovered as a gravel of fine to coarse angular to subangular concrete with occasional red brick)			0.45																			
				MADE GROUND (Dark brown slightly clayey sand with frequent gravel of fine to coarse brick, flint, chert, chalk and strong medium dense ironstone)			0.60						0.50-0.80	J	1										VOC=0ppm (peak)	
				POSSIBLE MADE GROUND (Soft olive brown slightly silty slightly gravelly clay. Gravel of fine to medium flint and chert with occasional calcareous nodules)			0.90						0.50-0.60	J	2											VOC=1ppm (peak)
				POSSIBLE MADE GROUND (Dark red brown silty clay with pale grey veining)			1.40						0.70-1.00	J	3											VOC=0ppm (peak)
				POSSIBLE MADE GROUND (Dark yellow brown slightly clayey silty medium sand)			1.90						1.40-1.80	J	4											VOC=0ppm (peak)
				2.50 - 3.00 Becoming dark grey brown with depth			1.90						2.20-2.40	J	5											VOC=0ppm (peak)
							2.50						2.60-2.80	J	6											VOC=0ppm (peak)
				Pale grey yellow brown silty fine to medium SAND with occasional pale grey banding (20-40mm)			3.50						3.60-3.90	J	7											VOC=0ppm (peak)
							4.00																			Medium inflow of water at 3.89m Borehole completed at 4.0m. Partial collapse to 3.0m upon completion

\*WATER Standing water level  
Water strikes

PIEZOMETER

Upper seal  
Response zone  
Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test

Blows SPT N

SPT blows for each 75mm increment (35) Undisturbed sample blow count  
N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
Brightwell Barns, Ipswich Road  
Brightwell, Suffolk, IP10 BJ  
Telephone: 01603 298076

PROJECT No. 2543,GI  
SHEET 1 OF 1  
HOLE No. BHC28

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3.1.GDT 16/10/17

DEPTH All depths, level and thicknesses in metres

<b>CLIENT: Suffolk County Council</b>		<b>PROJECT: Lake Lothing</b>			<b>GROUND LEVEL m</b>			<b>HOLE No. BHC101</b>		
LOGGED BY: SG FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE: 14/08/2017		EXCAVATION METHOD: Windowless sampler Uncased to 1.3 m			GRID REFERENCE:			SHEET 1 OF 1
							DATES 12/10/2017 - 13/10/2017			PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	
							0	10	20	30	40										
				CONCRETE (Concrete with steel rebar (5mm diameter))		0.00						0									No groundwater encountered during drilling
				MADE GROUND (Dark brown medium to coarse sand with frequent gravel of fine to coarse brick, flint, concrete, clinker and glass)		0.15						0.20	J	1							VOC=0ppm (peak)
				CONCRETE (Concrete with iron staining at base)		0.28															Concrete on west edge extended to beyond full depth of pit (former foundation)
				MADE GROUND (Dark brown sandy gravelly clay, Gravel of fine to coarse brick, flint, concrete and chalk with occasional decayed wood fragments)		0.50															
				0.60 Clay pipe (12mm diameter) filled with black gravelly clay with strong hydrocarbon odour								0.60	J	2							VOC=1ppm (peak)
				CONCRETE		0.85															
				Sandy GRAVEL of flint		1.05															
						1.28						1.20	J	3							VOC=0ppm (peak)
																					Borehole terminated at 1.28m due to concrete obstruction

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 16/10/17

\*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY  
 D Small disturbed sample  
 B Bulk disturbed sample  
 U Undisturbed sample  
 P Piston sample  
 J Disturbed jar sample  
 ES Environmental soil sample  
 W Water Sample

S Standard penetration test  
 C Cone penetration test  
 K Permeability test

Blows SPT N  
 SPT N = SPT N value (blows after seating)  
 N\*120 = Total blows/penetration including seating  
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd  
 Brightwell Barns, Ipswich Road  
 Brightwell, Suffolk, IP10 BJ  
 Telephone: 01603 298076

PROJECT No  
2543,GI  
SHEET  
1 OF 1  
HOLE No.  
BHC101

CLIENT: Suffolk County Council

PROJECT: Lake Lothing

GROUND LEVEL m

HOLE No. WSC103

LOGGED BY: SG  
FIELDWORK BY: DRILLT  
TEMPLATE REF: GEL AGS BH BETA

CHECKED BY: SG  
DATE: 18/10/2017

EXCAVATION METHOD: Windowless sampler  
Uncased to 4.0 m

GRID REFERENCE:  
DATES 17/10/2017 - 17/10/2017

SHEET 1 OF 1  
PROJECT NO. 2543,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Leg	Reduced Level	Depth	Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
								SPT 'N' Value					Blows	SPT N	<425 %	WC %	PL %	LL %	r Mg/m <sup>3</sup>	Cu kN/m <sup>2</sup>					
0	10	20	30	40	Depths	Type	No.																		
				MADE GROUND (Dark grey brown/yellow brown mottled desiccated silty fine to medium sand with frequent rootlets/roots (<1mm-5mm))	X		0.00																		
				MADE GROUND (Dark grey silty coarse sand with frequent gravel of flint, brick and ironstone/clinker)	X		0.20						0.25	J	1										VOC=1ppm (peak)
					X								0.50	J	2										VOC=1ppm (peak)
					X								0.75	J	3										VOC=3ppm (peak)
				POSSIBLE MADE GROUND (fill) (Orange brown/dark grey brown mottled fine to coarse sand with frequent subangular to subrounded flint and chert)	X		0.87						1.00	1	B	1									VOC=2ppm (peak)
				1.05 Becoming pale brown/dark orange brown mottled with depth	X								1.20	J	4										
				Dark orange brown gravelly medium to coarse SAND. Gravel of subangular to subrounded fine to coarse flint	O		1.35																		
				1.60 Occasional to frequent gravel present with depth	O																				VOC=2ppm (peak)
					O																				
				Black stained slightly gravelly medium to coarse SAND with faint heavy hydrocarbon odour	O		2.40																		Partial collapse of sidewalls to 2.26m
		2.80			O																				VOC=8ppm (peak)
					O																				Moderate inflow of water at 2.8m
				3.00 Becoming pale grey stained with depth	X		3.10																		VOC=2ppm (peak)
				Pale/dark yellow brown silty SAND with faint heavy hydrocarbon odour	X																				
					X																				
					X																				
					X		4.00																		Borehole completed at 4.0m. No further progress due to blowing sands

GEL AGS BH BETA 2543,GI - LAKE LOTHING.GPJ GINT STD AGS 3 1.GDT 18/10/17

\*WATER Standing water level  
Water strikes

PIEZOMETER  
Upper seal  
Response zone  
Lower seal

SAMPLE AND TEST KEY  
D Small disturbed sample  
B Bulk disturbed sample  
U Undisturbed sample  
P Piston sample  
J Disturbed jar sample  
ES Environmental soil sample  
W Water Sample

S Standard penetration test  
C Cone penetration test  
K Permeability test  
Blows SPT blows for each 75mm increment  
SPT N (35) Undisturbed sample blow count  
N = SPT N value (blows after seating)  
N\*120 = Total blows/penetration including seating  
<425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd  
Brightwell Barns, Ipswich Road  
Brightwell, Suffolk, IP10 BJ  
Telephone: 01603 298076

PROJECT No  
2543,GI  
SHEET  
1 OF 1  
HOLE No.  
WSC103

DEPTH All depths, level and thicknesses in metres



# Annex C.2

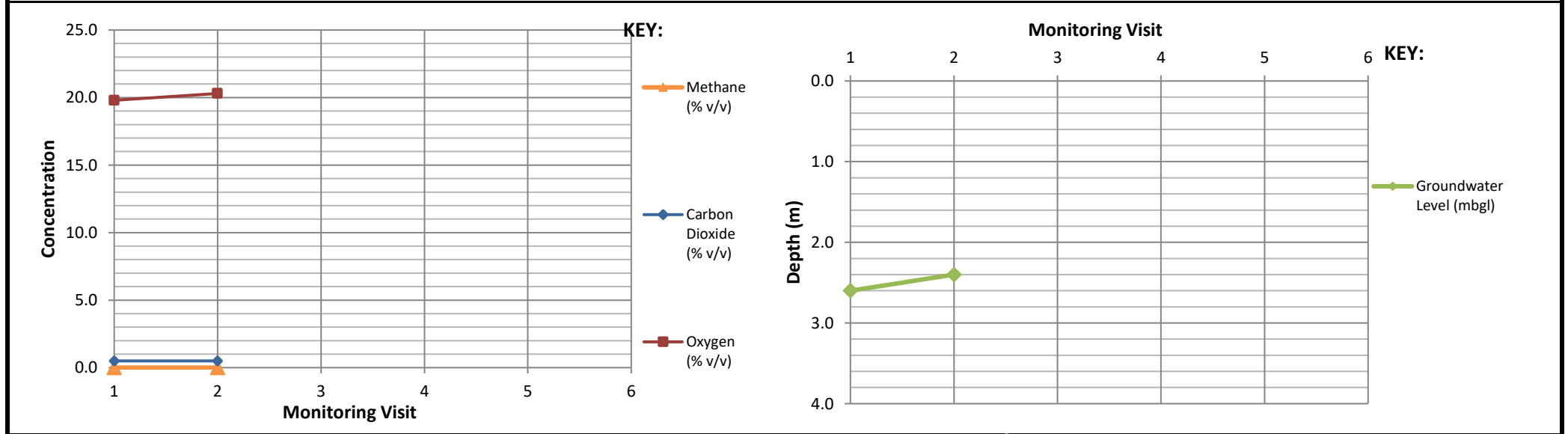
GAS AND GROUNDWATER

MONITORING



Exploratory Hole Location					BHC01					Date of Installation			20-04-18	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall	
			(% v/v)	(% LEL)										
1st visit	09-05-2018	1006	<0.1	<2	0.5	19.8	<0.1	nm	nm	4	2.60	Hot, sunny, dry, breezy		
2nd visit	23-05-2018	1002	<0.1	<2	0.5	20.3	+0.9	nm	nm	1	2.40	Hot, sunny, dry, windy		

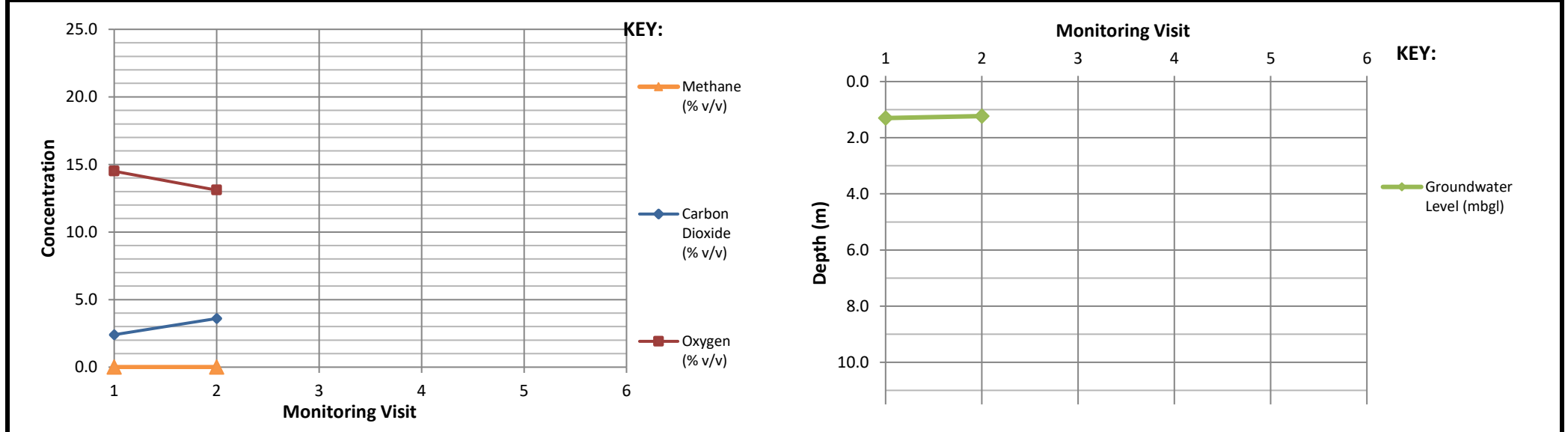
Instruments Used: GFM436 gas analyser / PID MultiRAE lite  
 REMARKS: NOTE: n/a Not applicable  
 nm Not measured



SITE: Lake Lothing, Lowestoft, Suffolk  
 REPORT: 2543,GI  
 DATE: May-18

Exploratory Hole Location		BHC02				Date of Installation					17-08-17		
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
			(% v/v)	(% LEL)									
1st visit	09-05-2018	1006	<0.1	<2	2.4	14.5	<0.1	nm	nm	<0.1	1.30	Hot, sunny, dry, breezy	
2nd visit	23-05-2018	1023	<0.1	<2	3.6	13.1	<0.1	nm	nm	<0.1	1.23	Hot, sunny, dry, windy	

Instrument Used: GFM436 gas analyser / PID MultiRAE lite  
 REMARKS: NOTE: n/a Not applicable  
 nm Not measured

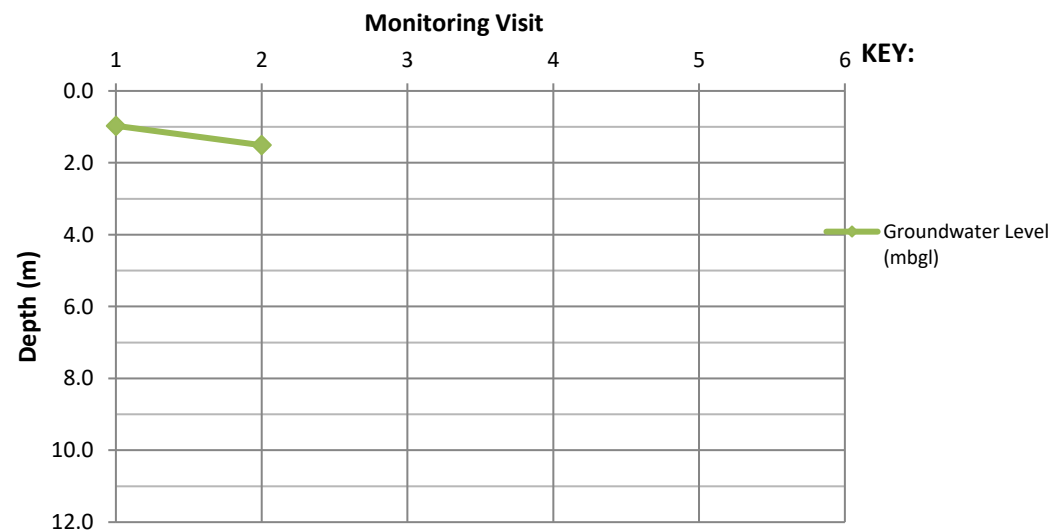
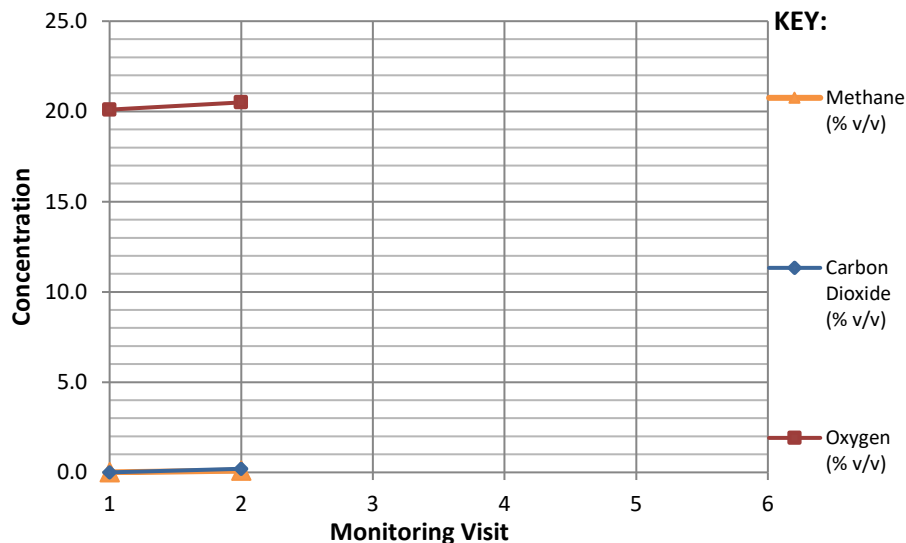


SITE	REPORT	DATE
Lake Lothing, Lowestoft, Suffolk	2543,GI	May-18



Exploratory Hole Location					BHC07					Date of Installation			27-03-18	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	H2S	CO	VOC	Water Level	Weather Conditions	Comments / Pressure Rise or Fall	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)			
1st visit	09-05-2018	1006	<0.1	<2	<0.1	20.1	<0.1	nm	nm	<0.1	0.97	Hot, sunny, dry, breezy	Peak flow +7.4 l/hr (at start)	
2nd visit	23-05-2018	1023	0.1	1	0.2	20.5	+0.1	nm	nm	<0.1	1.51	Hot, sunny, dry, windy	Peak flow +1.5 l/hr (at start)	

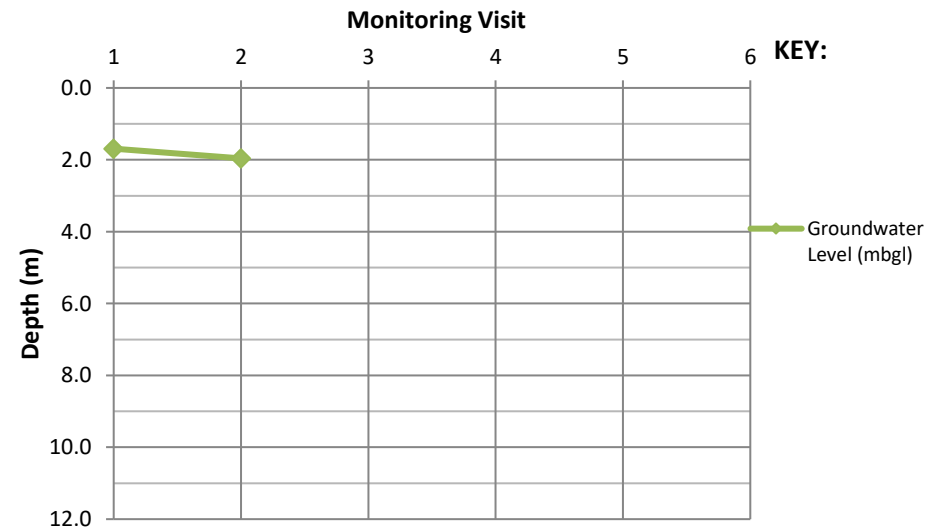
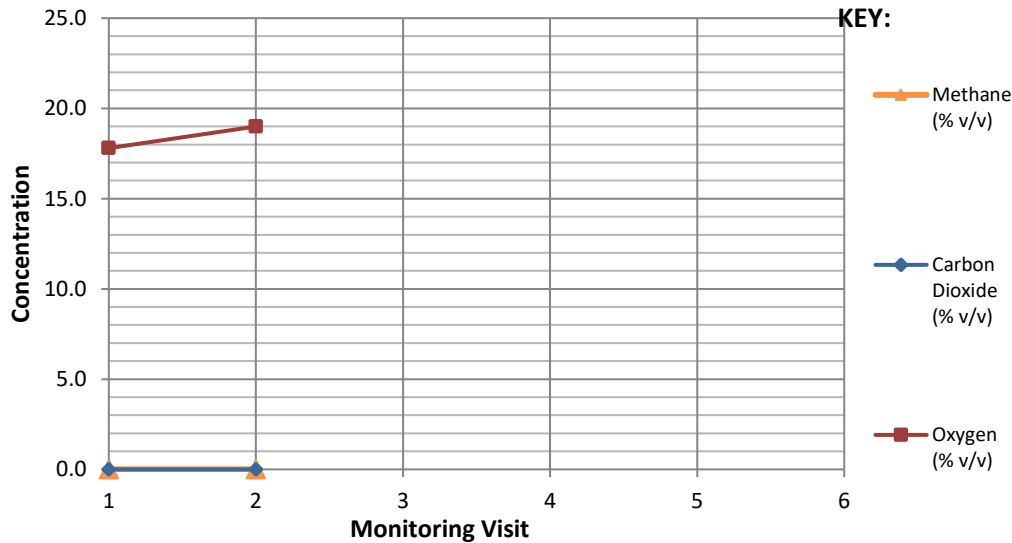
Instrument Used: GFM436 gas analyser / PID MultiRAE lite  
 REMARKS: NOTE: n/a Not applicable  
 nm Not measured



SITE	REPORT	DATE
Lake Lothing, Lowestoft, Suffolk	2543,GI	May-18

Exploratory Hole Location					BHC08					Date of Installation			16-03-18	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	H2S	CO	VOC	Water Level	Weather Conditions	Comments / Pressure Rise or Fall	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)			
1st visit	09-05-2018	1010	<0.1	<2	<0.1	17.8	<0.1	nm	nm	<0.1	1.69	Hot, sunny, dry, breezy	Peak flow -0.7 l/hr (at start)	
2nd visit	24-05-2018	1021	<0.1	<2	<0.1	19.0	<0.1	nm	nm	<0.1	1.96	Hot, sunny, dry, windy	Peak flow +0.9 l/hr (at start)	

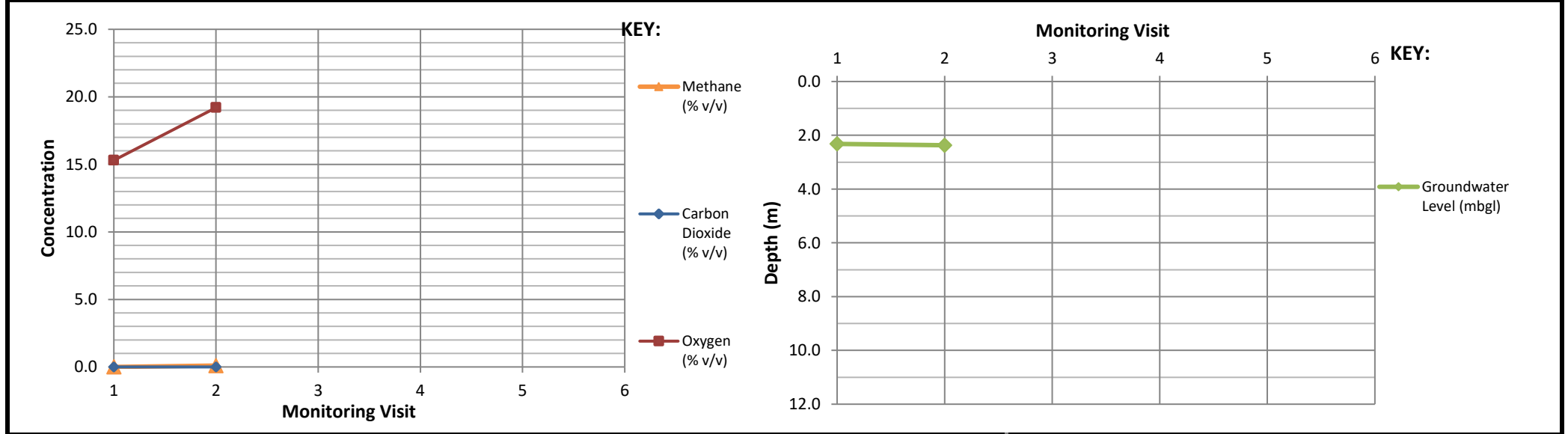
Instrument Used: GFM436 gas analyser / PID MultiRAE lite  
 REMARKS: NOTE: n/a Not applicable  
 nm Not measured



SITE: Lake Lothing, Lowestoft, Suffolk  
 REPORT: 2543,GI  
 DATE: May-18

Exploratory Hole Location		BHC09									Date of Installation		23-04-18	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	H2S	CO	VOC	Water Level	Weather Conditions	Comments / Pressure Rise or Fall	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)			
1st visit	09-05-2018	1012	<0.1	<2	<0.1	15.3	-0.3	nm	nm	1	2.32	Hot, sunny, dry, breezy		
2nd visit	24-05-2018	1021	0.1	1	<0.1	19.2	<0.1	nm	nm	<0.1	2.37	Hot, sunny, dry, windy		

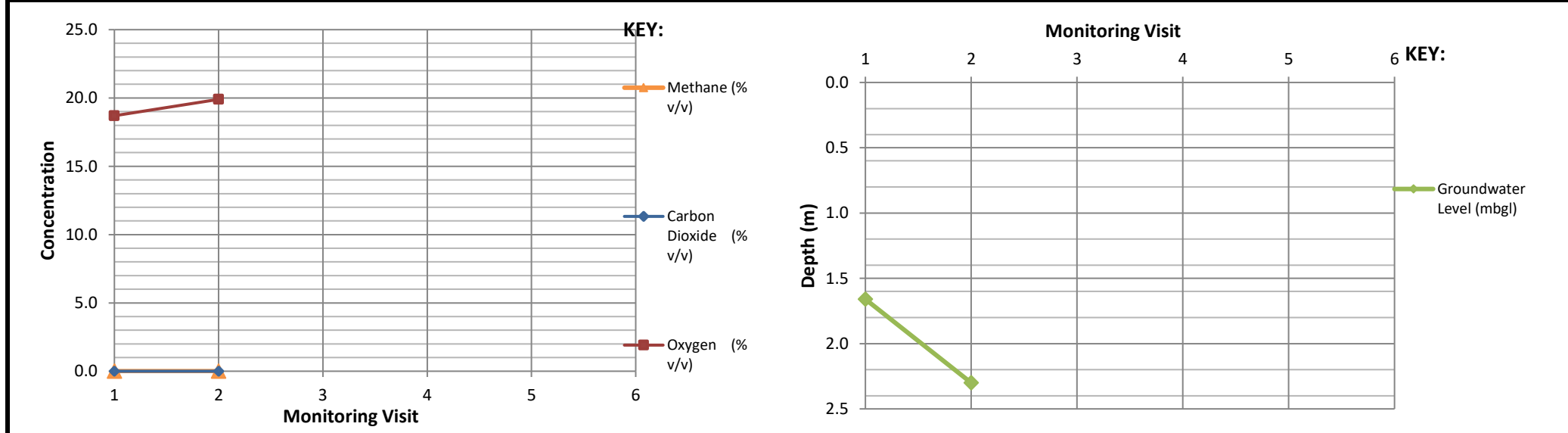
Instrument Used: GFM436 gas analyser / PID MultiRAE lite  
 REMARKS: NOTE: n/a Not applicable  
 nm Not measured



SITE: Lake Lothing, Lowestoft, Suffolk  
 REPORT: 2543,GI  
 DATE: May-18

Exploratory Hole Location		BHC14		Date of Installation								12-01-18	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	H2S	CO	VOC	Water Level	Weather Conditions	Comments / Pressure Rise or Fall
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)		
1st visit	09-05-2018	1007	<0.1	<2	<0.1	18.7	-0.3	nm	nm	3	1.66	Hot, sunny, dry, breezy	
2nd visit	23-05-2018	1023	<0.1	<2	<0.1	19.9	<0.1	nm	nm	<0.1	2.30	Hot, sunny, dry, windy	

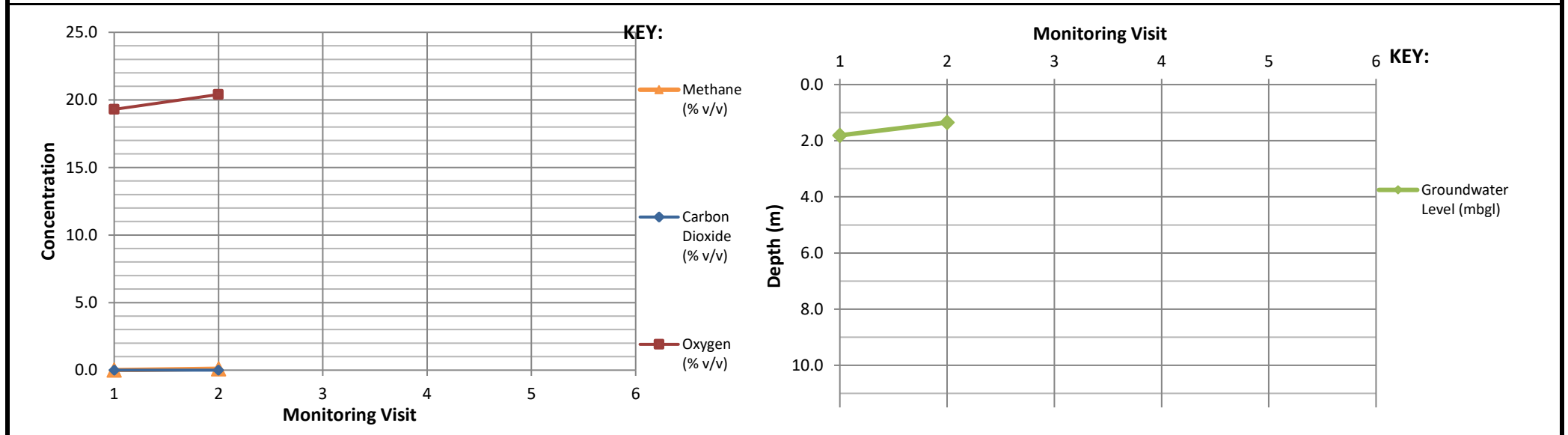
Instrument Used: GFM436 gas analyser / PID MultiRAE lite  
 REMARKS: NOTE: n/a Not applicable  
 nm Not measured



SITE: Lake Lothing, Lowestoft, Suffolk  
 REPORT: 2543,GI  
 DATE: May-18

Exploratory Hole Location		BHC24 (P)									Date of Installation		23-02-18	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	H2S	CO	VOC	Water Level	Weather Conditions	Comments / Pressure Rise or Fall	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)			
1st visit	09-05-2018	1007	<0.1	<2	<0.1	19.3	<0.1	nm	nm	<0.1	1.81	Hot, sunny, dry, breezy	Peak flow +50.4 l/hr (at start)	
2nd visit	24-05-2018	1025	0.1	1	<0.1	20.4	+0.3	nm	nm	<0.1	1.35	Hot, sunny, dry, windy	Peak flow +22.8 l/hr (at start)	

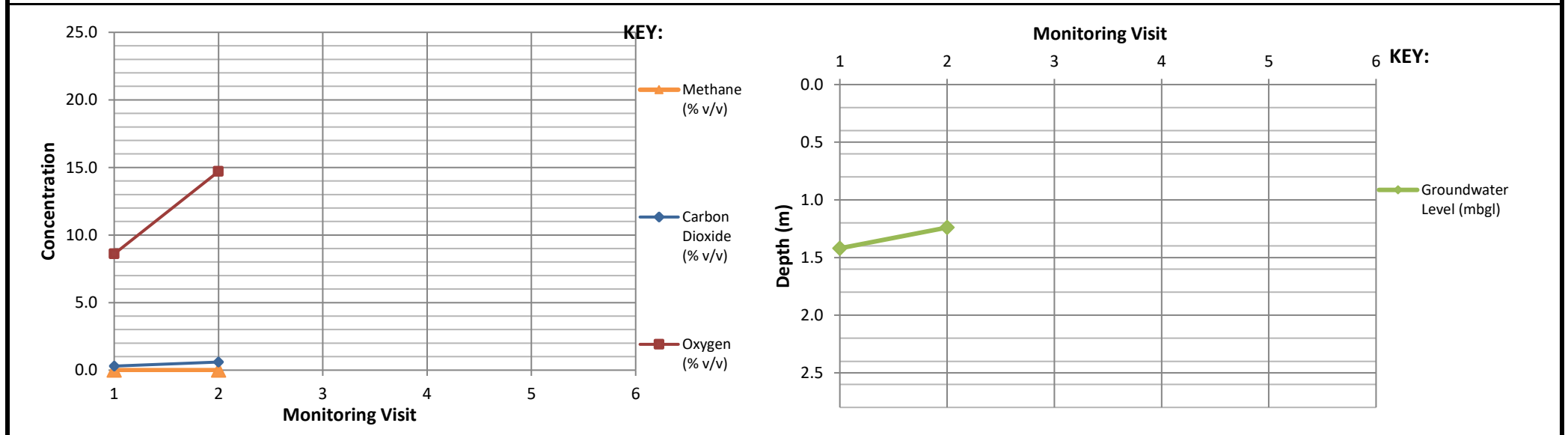
**Instrument Used:** GFM436 gas analyser / PID MultiRAE lite **NOTE:** n/a Not applicable  
**REMARKS:** nm Not measured



<b>SITE</b> Lake Lothing, Lowestoft, Suffolk	<b>REPORT</b> 2543,GI	<b>DATE</b> May-18
---	--------------------------	-----------------------

Exploratory Hole Location		BHC24 (GG)				Date of Installation						23-02-18	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
			(% v/v)	(% LEL)									
1st visit	09-05-2018	1007	<0.1	<2	0.3	8.6	<0.1	nm	nm	<0.1	1.42	Hot, sunny, dry, breezy	Peak flow -0.3 l/hr
2nd visit	24-05-2018	1025	<0.1	<2	0.6	14.7	<0.1	nm	nm	<0.1	1.24	Hot, sunny, dry, windy	

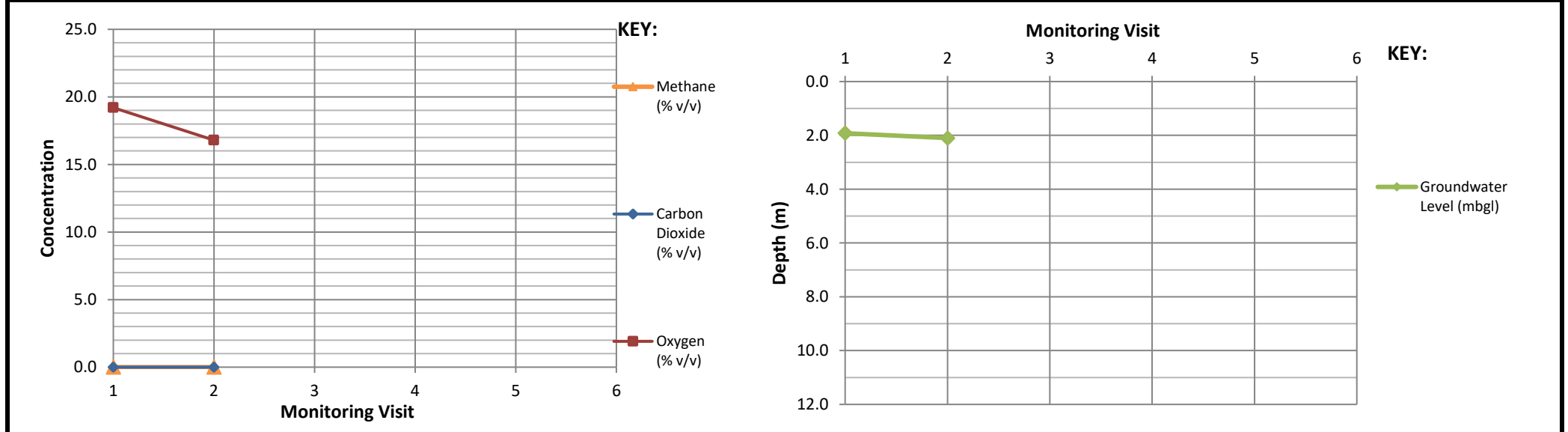
**Instrument Used:** GFM436 gas analyser / PID MultiRAE lite **NOTE:** n/a Not applicable  
**REMARKS:** nm Not measured



**SITE** Lake Lothing, Lowestoft, Suffolk **REPORT** 2543,GI **DATE** May-18

Exploratory Hole Location		BHC27									Date of Installation		15-01-18	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	H2S	CO	VOC	Water Level	Weather Conditions	Comments / Pressure Rise or Fall	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)			
1st visit	09-05-2018	1016	<0.1	<2	<0.1	19.2	-0.1	nm	nm	<0.1	1.92	Hot, sunny, dry, breezy	Peak flow -1.6l/hr (at start)	
2nd visit	23-05-2018	1023	<0.1	<2	<0.1	16.8	-0.9	nm	nm	<0.1	2.10	Hot, sunny, dry, windy		

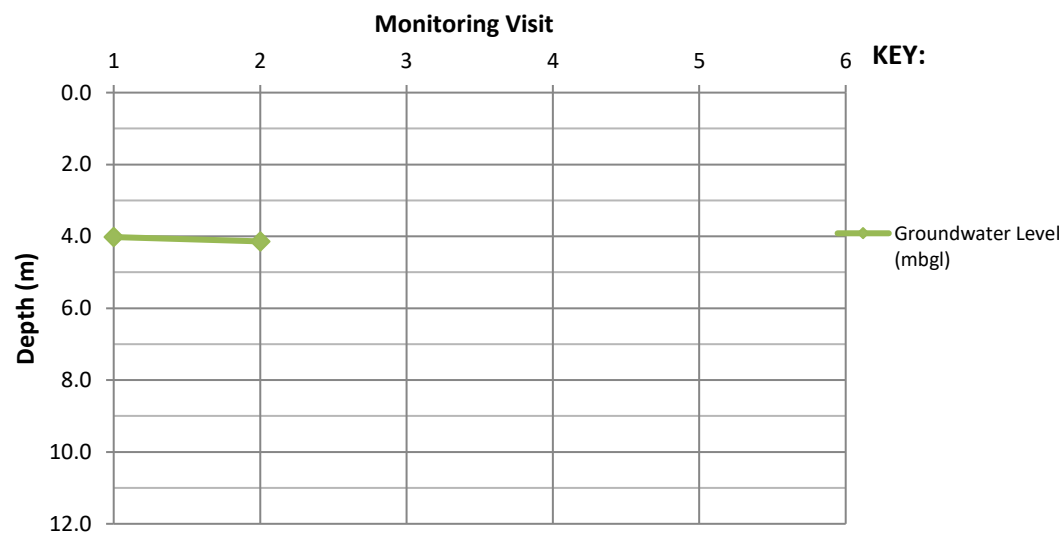
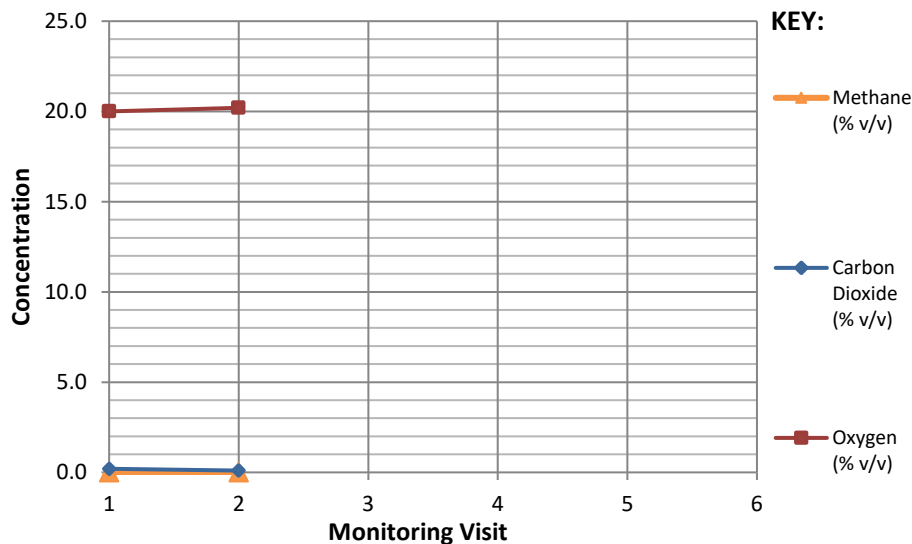
Instrument Used: GFM436 gas analyser / PID MultiRAE lite  
 REMARKS: NOTE: n/a Not applicable  
 nm Not measured



SITE: Lake Lothing, Lowestoft, Suffolk  
 REPORT: 2543,GI  
 DATE: May-18

Exploratory Hole Location		BHC102				Date of Installation						11-12-18	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	H2S	CO	VOC	Water Level	Weather Conditions	Comments / Pressure Rise or Fall
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)		
1st visit	09-05-2018	1007	<0.1	<2	0.2	20.0	<0.1	nm	nm	<0.1	4.02	Hot, sunny, dry, breezy	
2nd visit	23-05-2018	1023	<0.1	<2	0.1	20.2	<0.1	nm	nm	<0.1	4.14	Hot, sunny, dry, windy	

Instrument Used: GFM436 gas analyser / PID MultiRAE lite  
 REMARKS: NOTE: n/a Not applicable  
 nm Not measured



<b>SITE</b> Lake Lothing, Lowestoft, Suffolk	<b>REPORT</b> 2543,GI	<b>DATE</b> May-18
---	--------------------------	-----------------------



# Annex C.3

CHEMICAL TEST DATA



## Confirmation Receipt

---

**Report No.:** 18-14854-0

**Initial Date of Issue:**

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Lianne Fountain

**Project** 2543 GI Lake Loathing

**Quotation No.:** Q17-10179

**Date Received:** 25-May-2018

**Order No.:**

**Date Instructed:** 29-May-2018

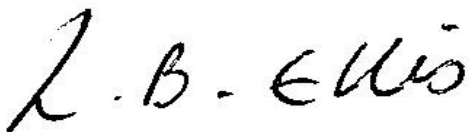
**No. of Samples:** 7

**Turnaround (Wkdays):** 5

**Results Due:** 04-Jun-2018

**Date Confirmed:** 29-May-2018

**Confirmed By:**



**Details:** Lorraine Ellis, Technical Admin

---

## Summary of Testing

**Project: 2543 GI Lake Loathing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.</b>	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179	<b>Chemtest Sample ID:</b>	628019	628909	628910	628911	628912	628913	628914
Order No.:	Client Sample Ref.:	BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09
	Client Sample ID.:	W1	W1	W1	W1	W1	W1	W1
	Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	Top Depth (m):	2.10	2.54	2.09	2.74	1.52	2.04	6.03
	Date Sampled:	23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018
<b>Suite</b>								
Lake Loathing Water Suite				Ordered	Ordered	Ordered	Ordered	Ordered

## Testing Breakdown

**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179		Chemtest Sample ID.:		628019	628909	628910	628911	628912	628913	628914	
Order No.:		Client Sample Ref.:		BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09	
		Client Sample ID.:		W1	W1	W1	W1	W1	W1	W1	
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	
		Top Depth (m):		2.10	2.54	2.09	2.74	1.52	2.04	6.03	
		Date Sampled:		23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018	
Suite	Determinand	Accred.	SOP	Units	LOD						
Lake Lothing Water Suite	pH	U	1010		N/A	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Ammonia (Free) as N	U	1220	mg/l	0.050	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Sulphate	U	1220	mg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Cyanide (Total)	U	1300	mg/l	0.050	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Cyanide (Free)	U	1300	mg/l	0.050	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Arsenic (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Boron (Dissolved)	U	1450	µg/l	20	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Cadmium (Dissolved)	U	1450	µg/l	0.080	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Chromium (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Copper (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Mercury (Dissolved)	U	1450	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Nickel (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Lead (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Selenium (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Zinc (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Chromium (Hexavalent)	U	1490	µg/l	20	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C5-C7	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C7-C8	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C8-C10	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C10-C12	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C12-C16	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C16-C21	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C21-C35	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C35-C44	N	1675	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Total Petroleum Hydrocarbons	N	1675	µg/l	10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Naphthalene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Acenaphthylene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Acenaphthene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Fluorene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered

## Testing Breakdown

**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179		Chemtest Sample ID.:		628019	628909	628910	628911	628912	628913	628914	
Order No.:		Client Sample Ref.:		BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09	
		Client Sample ID.:		W1	W1	W1	W1	W1	W1	W1	
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	
		Top Depth (m):		2.10	2.54	2.09	2.74	1.52	2.04	6.03	
		Date Sampled:		23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018	
Suite	Determinand	Accred.	SOP	Units	LOD						
Lake Lothing Water Suite	Phenanthrene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Anthracene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Fluoranthene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Pyrene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzo[a]anthracene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Chrysene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzo[b]fluoranthene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzo[k]fluoranthene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzo[a]pyrene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzo[g,h,i]perylene	U	1700	µg/l	0.10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Total Of 16 PAH's	U	1700	µg/l	2.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Dichlorodifluoromethane	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Chloromethane	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Vinyl Chloride	N	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Bromomethane	U	1760	µg/l	5.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Chloroethane	U	1760	µg/l	2.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Trichlorofluoromethane	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,1-Dichloroethene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,1-Dichloroethane	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	cis 1,2-Dichloroethene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Bromochloromethane	U	1760	µg/l	5.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Trichloromethane	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,1,1-Trichloroethane	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Tetrachloromethane	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,1-Dichloropropene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dichloroethane	U	1760	µg/l	2.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Trichloroethene	N	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dichloropropane	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Dibromomethane	U	1760	µg/l	10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Bromodichloromethane	U	1760	µg/l	5.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	cis-1,3-Dichloropropene	N	1760	µg/l	10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Toluene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Trans-1,3-Dichloropropene	N	1760	µg/l	10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,1,2-Trichloroethane	U	1760	µg/l	10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Tetrachloroethene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered

## Testing Breakdown

**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179		Chemtest Sample ID.:		628019	628909	628910	628911	628912	628913	628914	
Order No.:		Client Sample Ref.:		BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09	
		Client Sample ID.:		W1	W1	W1	W1	W1	W1	W1	
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	
		Top Depth (m):		2.10	2.54	2.09	2.74	1.52	2.04	6.03	
		Date Sampled:		23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018	
Suite	Determinand	Accred.	SOP	Units	LOD						
Lake Lothing Water Suite	1,3-Dichloropropane	U	1760	µg/l	2.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Dibromochloromethane	U	1760	µg/l	10	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dibromoethane	U	1760	µg/l	5.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Chlorobenzene	N	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Ethylbenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	m & p-Xylene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	o-Xylene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Styrene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Tribromomethane	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Isopropylbenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Bromobenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2,3-Trichloropropane	N	1760	µg/l	50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	N-Propylbenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2-Chlorotoluene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	4-Chlorotoluene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Tert-Butylbenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Sec-Butylbenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,3-Dichlorobenzene	N	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	4-Isopropyltoluene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,4-Dichlorobenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	N-Butylbenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dichlorobenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Hexachlorobutadiene	U	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	N-Nitrosodimethylamine	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Phenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2-Chlorophenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,3-Dichlorobenzene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,4-Dichlorobenzene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dichlorobenzene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered

## Testing Breakdown

**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179		Chemtest Sample ID.:		628019	628909	628910	628911	628912	628913	628914	
Order No.:		Client Sample Ref.:		BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09	
		Client Sample ID.:		W1	W1	W1	W1	W1	W1	W1	
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	
		Top Depth (m):		2.10	2.54	2.09	2.74	1.52	2.04	6.03	
		Date Sampled:		23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018	
Suite	Determinand	Accred.	SOP	Units	LOD						
Lake Lothing Water Suite	Hexachloroethane	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	4-Methylphenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Nitrobenzene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Isophorone	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2-Nitrophenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2,4-Dimethylphenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2,4-Dichlorophenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Naphthalene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	4-Chloroaniline	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Hexachlorobutadiene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2-Methylnaphthalene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Hexachlorocyclopentadiene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2,4,6-Trichlorophenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2,4,5-Trichlorophenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2-Chloronaphthalene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2-Nitroaniline	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Acenaphthylene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Dimethylphthalate	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2,6-Dinitrotoluene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Acenaphthene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	3-Nitroaniline	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Dibenzofuran	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	4-Chlorophenylphenylether	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2,4-Dinitrotoluene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Fluorene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Diethyl Phthalate	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	4-Nitroaniline	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Azobenzene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Hexachlorobenzene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Pentachlorophenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Phenanthrene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Anthracene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Carbazole	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered

## Testing Breakdown

**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179		Chemtest Sample ID.:		628019	628909	628910	628911	628912	628913	628914	
Order No.:		Client Sample Ref.:		BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09	
		Client Sample ID.:		W1	W1	W1	W1	W1	W1	W1	
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	
		Top Depth (m):		2.10	2.54	2.09	2.74	1.52	2.04	6.03	
		Date Sampled:		23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018	
Suite	Determinand	Accred.	SOP	Units	LOD						
Lake Lothing Water Suite	Di-N-Butyl Phthalate	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Fluoranthene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Pyrene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Butylbenzyl Phthalate	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzo[a]anthracene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Chrysene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Di-N-Octyl Phthalate	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzo[b]fluoranthene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzo[k]fluoranthene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzo[a]pyrene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Benzo[g,h,i]perylene	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	4-Nitrophenol	N	1790	µg/l	0.50	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered
Lake Lothing Water Suite	Total Phenols	U	1920	mg/l	0.030	Ordered	Ordered	Ordered	Ordered	Ordered	Ordered



## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)

## Confirmation Receipt

---

**Report No.:** 18-15148-0

**Initial Date of Issue:**

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Lianne Fountain

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179

**Date Received:** 31-May-2018

**Order No.:** 2543, GI

**Date Instructed:** 31-May-2018

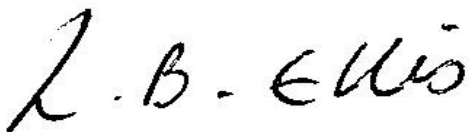
**No. of Samples:** 2

**Turnaround (Wkdays):** 3

**Results Due:** 04-Jun-2018

**Date Confirmed:** 31-May-2018

**Confirmed By:**



**Details:** Lorraine Ellis, Technical Admin

---

**Project: 2543, GI Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.</b>	18-15148	18-15148
Quotation No.: Q17-10179	<b>Chemtest Sample ID:</b>	630538	630539
Order No.: 2543, GI	Client Sample Ref.:	BHC02	BHC07
	Client Sample ID.:	W2	W2
	Sample Type:	WATER	WATER
	Top Depth (m):	1.10	1.15
	Bottom Depth (m):	1.40	1.40
	Date Sampled:	30-May-2018	30-May-2018
<b>Suite</b>			
Lake Lothing Water Suite		Ordered	Ordered

**Project: 2543, GI Lake Lothing, Lowestoft**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-15148	18-15148		
Quotation No.: Q17-10179		Chemtest Sample ID.:		630538	630539		
Order No.: 2543, GI		Client Sample Ref.:		BHC02	BHC07		
		Client Sample ID.:		W2	W2		
		Sample Type:		WATER	WATER		
		Top Depth (m):		1.10	1.15		
		Bottom Depth (m):		1.40	1.40		
		Date Sampled:		30-May-2018	30-May-2018		
Suite	Determinand	Accred.	SOP	Units	LOD		
Lake Lothing Water Suite	pH	U	1010		N/A	Ordered	Ordered
Lake Lothing Water Suite	Ammonia (Free) as N	U	1220	mg/l	0.050	Ordered	Ordered
Lake Lothing Water Suite	Sulphate	U	1220	mg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Cyanide (Total)	U	1300	mg/l	0.050	Ordered	Ordered
Lake Lothing Water Suite	Cyanide (Free)	U	1300	mg/l	0.050	Ordered	Ordered
Lake Lothing Water Suite	Arsenic (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Boron (Dissolved)	U	1450	µg/l	20	Ordered	Ordered
Lake Lothing Water Suite	Cadmium (Dissolved)	U	1450	µg/l	0.080	Ordered	Ordered
Lake Lothing Water Suite	Chromium (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Copper (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Mercury (Dissolved)	U	1450	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Nickel (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Lead (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Selenium (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Zinc (Dissolved)	U	1450	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Chromium (Hexavalent)	U	1490	µg/l	20	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C5-C7	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C7-C8	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C8-C10	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C10-C12	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C12-C16	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C16-C21	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C21-C35	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Aromatic TPH >C35-C44	N	1675	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	Ordered	Ordered
Lake Lothing Water Suite	Total Petroleum Hydrocarbons	N	1675	µg/l	10	Ordered	Ordered
Lake Lothing Water Suite	Naphthalene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Acenaphthylene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Acenaphthene	U	1700	µg/l	0.10	Ordered	Ordered

## Testing Breakdown

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-15148	18-15148		
Quotation No.: Q17-10179		Chemtest Sample ID.:		630538	630539		
Order No.: 2543, GI		Client Sample Ref.:		BHC02	BHC07		
		Client Sample ID.:		W2	W2		
		Sample Type:		WATER	WATER		
		Top Depth (m):		1.10	1.15		
		Bottom Depth (m):		1.40	1.40		
		Date Sampled:		30-May-2018	30-May-2018		
Suite	Determinand	Accred.	SOP	Units	LOD		
Lake Lothing Water Suite	Fluorene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Phenanthrene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Anthracene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Fluoranthene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Pyrene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Benzo[a]anthracene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Chrysene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Benzo[b]fluoranthene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Benzo[k]fluoranthene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Benzo[a]pyrene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Benzo[g,h,i]perylene	U	1700	µg/l	0.10	Ordered	Ordered
Lake Lothing Water Suite	Total Of 16 PAH's	U	1700	µg/l	2.0	Ordered	Ordered
Lake Lothing Water Suite	Dichlorodifluoromethane	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Chloromethane	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Vinyl Chloride	N	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Bromomethane	U	1760	µg/l	5.0	Ordered	Ordered
Lake Lothing Water Suite	Chloroethane	U	1760	µg/l	2.0	Ordered	Ordered
Lake Lothing Water Suite	Trichlorofluoromethane	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,1-Dichloroethene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,1-Dichloroethane	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	cis 1,2-Dichloroethene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Bromochloromethane	U	1760	µg/l	5.0	Ordered	Ordered
Lake Lothing Water Suite	Trichloromethane	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,1,1-Trichloroethane	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Tetrachloromethane	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,1-Dichloropropene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Benzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dichloroethane	U	1760	µg/l	2.0	Ordered	Ordered
Lake Lothing Water Suite	Trichloroethene	N	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dichloropropane	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Dibromomethane	U	1760	µg/l	10	Ordered	Ordered
Lake Lothing Water Suite	Bromodichloromethane	U	1760	µg/l	5.0	Ordered	Ordered
Lake Lothing Water Suite	cis-1,3-Dichloropropene	N	1760	µg/l	10	Ordered	Ordered
Lake Lothing Water Suite	Toluene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Trans-1,3-Dichloropropene	N	1760	µg/l	10	Ordered	Ordered

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-15148	18-15148		
Quotation No.: Q17-10179		Chemtest Sample ID.:		630538	630539		
Order No.: 2543, GI		Client Sample Ref.:		BHC02	BHC07		
		Client Sample ID.:		W2	W2		
		Sample Type:		WATER	WATER		
		Top Depth (m):		1.10	1.15		
		Bottom Depth (m):		1.40	1.40		
		Date Sampled:		30-May-2018	30-May-2018		
Suite	Determinand	Accred.	SOP	Units	LOD		
Lake Lothing Water Suite	1,1,2-Trichloroethane	U	1760	µg/l	10	Ordered	Ordered
Lake Lothing Water Suite	Tetrachloroethene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,3-Dichloropropane	U	1760	µg/l	2.0	Ordered	Ordered
Lake Lothing Water Suite	Dibromochloromethane	U	1760	µg/l	10	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dibromoethane	U	1760	µg/l	5.0	Ordered	Ordered
Lake Lothing Water Suite	Chlorobenzene	N	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	Ordered	Ordered
Lake Lothing Water Suite	Ethylbenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	m & p-Xylene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	o-Xylene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Styrene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Tribromomethane	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Isopropylbenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Bromobenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,2,3-Trichloropropane	N	1760	µg/l	50	Ordered	Ordered
Lake Lothing Water Suite	N-Propylbenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	2-Chlorotoluene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	4-Chlorotoluene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Tert-Butylbenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Sec-Butylbenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,3-Dichlorobenzene	N	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	4-Isopropyltoluene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,4-Dichlorobenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	N-Butylbenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dichlorobenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	Ordered	Ordered
Lake Lothing Water Suite	1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	Hexachlorobutadiene	U	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	Ordered	Ordered
Lake Lothing Water Suite	Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	Ordered	Ordered
Lake Lothing Water Suite	N-Nitrosodimethylamine	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Phenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2-Chlorophenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	1,3-Dichlorobenzene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	1,4-Dichlorobenzene	N	1790	µg/l	0.50	Ordered	Ordered

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-15148	18-15148		
Quotation No.: Q17-10179		Chemtest Sample ID.:		630538	630539		
Order No.: 2543, GI		Client Sample Ref.:		BHC02	BHC07		
		Client Sample ID.:		W2	W2		
		Sample Type:		WATER	WATER		
		Top Depth (m):		1.10	1.15		
		Bottom Depth (m):		1.40	1.40		
		Date Sampled:		30-May-2018	30-May-2018		
Suite	Determinand	Accred.	SOP	Units	LOD		
Lake Lothing Water Suite	1,2-Dichlorobenzene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Hexachloroethane	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	4-Methylphenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Nitrobenzene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Isophorone	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2-Nitrophenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2,4-Dimethylphenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2,4-Dichlorophenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Naphthalene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	4-Chloroaniline	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Hexachlorobutadiene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2-Methylnaphthalene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Hexachlorocyclopentadiene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2,4,6-Trichlorophenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2,4,5-Trichlorophenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2-Chloronaphthalene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2-Nitroaniline	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Acenaphthylene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Dimethylphthalate	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2,6-Dinitrotoluene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Acenaphthene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	3-Nitroaniline	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Dibenzofuran	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	4-Chlorophenylphenylether	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2,4-Dinitrotoluene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Fluorene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Diethyl Phthalate	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	4-Nitroaniline	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Azobenzene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Hexachlorobenzene	N	1790	µg/l	0.50	Ordered	Ordered

**Project: 2543, GI Lake Lothing, Lowestoft**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-15148	18-15148		
Quotation No.: Q17-10179		Chemtest Sample ID.:		630538	630539		
Order No.: 2543, GI		Client Sample Ref.:		BHC02	BHC07		
		Client Sample ID.:		W2	W2		
		Sample Type:		WATER	WATER		
		Top Depth (m):		1.10	1.15		
		Bottom Depth (m):		1.40	1.40		
		Date Sampled:		30-May-2018	30-May-2018		
Suite	Determinand	Accred.	SOP	Units	LOD		
Lake Lothing Water Suite	Pentachlorophenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Phenanthrene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Anthracene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Carbazole	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Di-N-Butyl Phthalate	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Fluoranthene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Pyrene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Butylbenzyl Phthalate	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Benzo[a]anthracene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Chrysene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Di-N-Octyl Phthalate	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Benzo[b]fluoranthene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Benzo[k]fluoranthene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Benzo[a]pyrene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Benzo[g,h,i]perylene	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	4-Nitrophenol	N	1790	µg/l	0.50	Ordered	Ordered
Lake Lothing Water Suite	Total Phenols	U	1920	mg/l	0.030	Ordered	Ordered



## Report Information

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

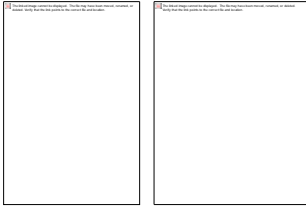
[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)

	17424916	17424917	17424918	17424919
<b>Order details</b>				
SDG ID.	180423-34	180423-34	180423-34	180423-34
Status	Authorised	Authorised	Authorised	Authorised
Project Site	Lowestoft	Lowestoft	Lowestoft	Lowestoft
Project	62240712	62240712	62240712	62240712
Contact	Neil Balderston	Neil Balderston	Neil Balderston	Neil Balderstone

	WS01	WS02	WS03	WS04
<b>Sampling details</b>				
Sample Description	WS01	WS02	WS03	WS04
Status	Authorised	Authorised	Authorised	Authorised
Sample Depth	0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20
Sample Type	SURFACE_WA	SURFACE_WA	SURFACE_WA	SURFACE_WATER
AGS Sample Type				
AGS Sample Reference				
Date Sampled	19/04/2018	19/04/2018	19/04/2018	19/04/2018
Received On	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Date Complete	30/04/2018	30/04/2018	30/04/2018	30/04/2018

#### Laboratory data

<b>Carbon</b>				
Organic Carbon, Total mg/l	<3	<3	<3	<3
<b>Inorganics</b>				
Alkalinity, Total as CaCO3 mg/l	135	124	122	122
Ammoniacal Nitrogen as N mg/l	<0.2	<0.2	<0.2	<0.2
Apparent Colour mg/l Pt/Co	27.3	13.7	9.61	11.3
Chloride mg/l	18400	18500	18000	18300
Conductivity @ 20 deg.C mS/cm	45.8	46.7	46.3	45.1
Nitrate as NO3 mg/l	<0.3	<0.3	<0.3	<0.3
pH pH Units	7.9	7.92	7.93	7.9
Phosphate (Ortho as PO4) mg/l	<0.05	<0.05	<0.05	<0.05
Sulphate mg/l	2640	2620	2610	2600
Suspended solids, Total mg/l	42.3	36.8	40.8	34.2
True Colour mg/l Pt/Co	1.38	1.95	1.49	1.51
<b>Filtered (Dissolved) Metals</b>				
Aluminium (diss.filt) µg/l	<60	<60	<60	<60
Arsenic (diss.filt) µg/l	<3	<3	<3	<3
Cadmium (diss.filt) µg/l	<0.48	<0.48	<0.48	<0.48
Chromium (diss.filt) µg/l	<6	<6	<6	<6
Copper (diss.filt) µg/l	3.32	1.84	<1.8	<1.8
Iron (Dis.Filt) mg/l	<0.114	<0.114	<0.114	<0.114
Lead (diss.filt) µg/l	<1.2	<1.2	<1.2	<1.2
Manganese (diss.filt) µg/l	<18	18.5	22.3	18.9
Mercury (diss.filt) µg/l	<0.01	<0.01	<0.01	<0.01
Nickel (diss.filt) µg/l	3.13	<2.4	<2.4	3.32
Zinc (diss.filt) µg/l	26.8	19.9	21.2	8.88
<b>Unfiltered (Total) Metals</b>				
Calcium (Tot. Unfilt.) mg/l	440	450	415	461
Magnesium (Tot. Unfilt.) mg/l	1130	1160	1150	1130
Potassium (Tot. Unfilt.) mg/l	361	356	355	349
Sodium (Tot. Unfilt.) mg/l	8440	8940	9050	8890
<b>Gasoline Range Organics (GRO)</b>				
EPH (C6-C10) µg/l	<100	<100	<100	<100
GRO >C5-C10 µg/l	<10	<10	<10	<10
<b>EPH (Extractable Petroleum Hydrocarbons)</b>				
EPH Range >C10 - C40 (aq) µg/l	<100	<100	<100	<100
<b>TPH Criteria Working Group (TPH CWG)</b>				
Benzene µg/l	<7	<7	<7	<7
Ethylbenzene µg/l	<5	<5	<5	<5
m,p-Xylene µg/l	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE) µg/l	<3	<3	<3	<3
o-Xylene µg/l	<3	<3	<3	<3
Sum of detected BTEX µg/l	<28	<28	<28	<28
Toluene µg/l	<4	<4	<4	<4
Total EPH (C6-C40) (aq) µg/l	<100	<100	<100	<100



## Final Report

---

**Report No.:** 17-20019-1

**Initial Date of Issue:** 07-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing L20, Lowestoft

**Quotation No.:** **Date Received:** 01-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 01-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 07-Aug-2017

**Date Approved:** 07-Aug-2017

**Approved By:**



**Details:** Robert Monk, Technical Development  
Chemist

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:				17-20019
Quotation No.:		Chemtest Sample ID.:				491165
Order No.: 2543, GI		Client Sample Ref.:				BHC06
		Client Sample ID.:				J3
		Sample Type:				SOIL
		Top Depth (m):				0.5
		Date Sampled:				28-Jul-2017
Determinand	Accred.	SOP	Units	LOD		
pH	U	1010		N/A	8.0	
Ammonia (Free)	U	1220	mg/l	0.010	< 0.010	
Sulphate	U	1220	mg/l	1.0	< 1.0	
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	
Arsenic (Dissolved)	U	1450	µg/l	1.0	3.5	
Boron (Dissolved)	U	1450	µg/l	20	37	
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	
Copper (Dissolved)	U	1450	µg/l	1.0	15	
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	
Nickel (Dissolved)	U	1450	µg/l	1.0	1.5	
Lead (Dissolved)	U	1450	µg/l	1.0	6.3	
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0	
Zinc (Dissolved)	U	1450	µg/l	1.0	3.4	
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	
Naphthalene	U	1700	µg/l	0.10	< 0.10	
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	
Acenaphthene	U	1700	µg/l	0.10	< 0.10	
Fluorene	U	1700	µg/l	0.10	< 0.10	

Client: Geosphere Environmental Ltd		Chemtest Job No.:				17-20019
Quotation No.:		Chemtest Sample ID.:				491165
Order No.: 2543, GI		Client Sample Ref.:				BHC06
		Client Sample ID.:				J3
		Sample Type:				SOIL
		Top Depth (m):				0.5
		Date Sampled:				28-Jul-2017
Determinand	Accred.	SOP	Units	LOD		
Phenanthrene	U	1700	µg/l	0.10	< 0.10	
Anthracene	U	1700	µg/l	0.10	< 0.10	
Fluoranthene	U	1700	µg/l	0.10	< 0.10	
Pyrene	U	1700	µg/l	0.10	< 0.10	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	
Chrysene	U	1700	µg/l	0.10	< 0.10	
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	
Benzene	U	1760	µg/l	1.0	< 1.0	
Toluene	U	1760	µg/l	1.0	< 1.0	
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	
o-Xylene	U	1760	µg/l	1.0	< 1.0	
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	
Phenol	N	1790	µg/l	0.50	< 0.50	
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	
Isophorone	N	1790	µg/l	0.50	< 0.50	
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	
Naphthalene	N	1790	µg/l	0.50	< 0.50	

Client: Geosphere Environmental Ltd		Chemtest Job No.:				17-20019
Quotation No.:		Chemtest Sample ID.:				491165
Order No.: 2543, GI		Client Sample Ref.:				BHC06
		Client Sample ID.:				J3
		Sample Type:				SOIL
		Top Depth (m):				0.5
		Date Sampled:				28-Jul-2017
Determinand	Accred.	SOP	Units	LOD		
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	
Acenaphthene	N	1790	µg/l	0.50	< 0.50	
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	
Fluorene	N	1790	µg/l	0.50	< 0.50	
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	
Azobenzene	N	1790	µg/l	0.50	< 0.50	
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	
Phenanthrene	N	1790	µg/l	0.50	< 0.50	
Anthracene	N	1790	µg/l	0.50	< 0.50	
Carbazole	N	1790	µg/l	0.50	< 0.50	
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	
Fluoranthene	N	1790	µg/l	0.50	< 0.50	
Pyrene	N	1790	µg/l	0.50	< 0.50	
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	
Chrysene	N	1790	µg/l	0.50	< 0.50	
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	

**Project: 2543, GI Lake Lothing L20, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-20019				
Quotation No.:	<b>Chemtest Sample ID.:</b> 491165				
Order No.: 2543, GI	Client Sample Ref.: BHC06				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 0.5				
	Date Sampled: 28-Jul-2017				
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20019
Quotation No.:	<b>Chemtest Sample ID.:</b>				491165
Order No.: 2543, GI	Client Sample Ref.:				BHC06
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				0.5
	Date Sampled:				28-Jul-2017
	Asbestos Lab:				COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	11
Soil Colour	N	2040		N/A	Brown
Other Material	N	2040		N/A	Stones
Soil Texture	N	2040		N/A	Sand
pH	M	2010		N/A	6.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.43
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.011
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50
Ammonium (Water Soluble)	M	2120	g/l	0.01	< 0.01
Sulphate (Total)	M	2430	mg/kg	100	490
Arsenic	M	2450	mg/kg	1.0	10
Cadmium	M	2450	mg/kg	0.10	0.10
Chromium	M	2450	mg/kg	1.0	9.0
Copper	M	2450	mg/kg	0.50	57
Mercury	M	2450	mg/kg	0.10	0.36
Nickel	M	2450	mg/kg	0.50	17
Lead	M	2450	mg/kg	0.50	85
Selenium	M	2450	mg/kg	0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	83
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	3.2
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	12
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	26
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	28
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	69
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	2.5
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	44
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	21
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20019
Quotation No.:	<b>Chemtest Sample ID.:</b>				491165
Order No.: 2543, GI	Client Sample Ref.:				BHC06
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				0.5
	Date Sampled:				28-Jul-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	68
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	140
Naphthalene	M	2700	mg/kg	0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0

**Project: 2543, GI Lake Lothing L20, Lowestoft**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20019	
Quotation No.:		Chemtest Sample ID.:		491165	
Order No.: 2543, GI		Client Sample Ref.:		BHC06	
		Client Sample ID.:		J3	
		Sample Type:		SOIL	
		Top Depth (m):		0.5	
		Date Sampled:		28-Jul-2017	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	M	2760	µg/kg	1.0	3.9
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	16
m & p-Xylene	M	2760	µg/kg	1.0	58
o-Xylene	M	2760	µg/kg	1.0	570
Styrene	M	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	19
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	1100
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	70
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20019
Quotation No.:	<b>Chemtest Sample ID.:</b>				491165
Order No.: 2543, GI	Client Sample Ref.:				BHC06
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				0.5
	Date Sampled:				28-Jul-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	2.0
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	1.3
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20019
Quotation No.:	<b>Chemtest Sample ID.:</b>				491165
Order No.: 2543, GI	Client Sample Ref.:				BHC06
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				0.5
	Date Sampled:				28-Jul-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010
PCB 180	M	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.

SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-20021-1

**Initial Date of Issue:** 09-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing

**Quotation No.:** **Date Received:** 01-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 01-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 09-Aug-2017

**Date Approved:** 09-Aug-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---



## Results - 2 Stage WAC

**Project: 2543, GI Lake Lothing**

Chemtest Job No: 17-20021							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 491172							Limits			
Sample Ref: BHC06							Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Sample ID: J3										
Top Depth(m): 0.5										
Bottom Depth(m):										
Sampling Date: 28-Jul-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%	1.0	3	5	6			
Loss On Ignition	2610	U	%	2.7	--	--	10			
Total BTEX	2760	U	mg/kg	0.023	6	--	--			
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--			
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	270	500	--	--			
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--			
pH	2010	U		7.6	--	>6	--			
Acid Neutralisation Capacity	2015	N	mol/kg	0.018	--	To evaluate	To evaluate			
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.0068	0.0066	< 0.050	0.066	0.5	2	25	
Barium	1450	U	0.048	0.033	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	0.0093	0.013	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.0092	0.0043	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	0.0014	0.0037	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	0.0015	0.017	< 0.010	0.15	0.5	10	50	
Antimony	1450	U	0.0042	0.0040	< 0.010	0.040	0.06	0.7	5	
Selenium	1450	U	< 0.0010	0.0010	< 0.010	< 0.010	0.1	0.5	7	
Zinc	1450	U	0.0037	0.011	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	5.6	2.0	11	24	800	15000	25000	
Fluoride	1220	U	0.31	0.21	< 1.0	2.2	10	150	500	
Sulphate	1220	U	16	7.7	32	87	1000	20000	50000	
Total Dissolved Solids	1020	N	150	74	300	830	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	28	16	56	170	500	800	1000	

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.328
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.214

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-20200-1

**Initial Date of Issue:** 09-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 02-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 03-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 09-Aug-2017

**Date Approved:** 09-Aug-2017

**Approved By:**

**Details:** Robert Monk, Technical Development  
Chemist

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20200
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				492029
Order No.: 2543, GI	Client Sample Ref.:				TPC05
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				1.00
	Date Sampled:				31-Jul-2017
	Asbestos Lab:				COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	14
pH	U	2010		N/A	6.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.60
Sulphate (2:1 Water Soluble) as SO <sub>4</sub>	U	2120	g/l	0.010	0.097
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	25
Sulphate (Total)	U	2430	%	0.010	0.16
Arsenic	U	2450	mg/kg	1.0	9.2
Cadmium	U	2450	mg/kg	0.10	0.19
Chromium	U	2450	mg/kg	1.0	13
Copper	U	2450	mg/kg	0.50	55
Mercury	U	2450	mg/kg	0.10	0.23
Nickel	U	2450	mg/kg	0.50	16
Lead	U	2450	mg/kg	0.50	98
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	140
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	4.9
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	12
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	90
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	110
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	2.7
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	170
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-20200	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		492029	
Order No.: 2543, GI		Client Sample Ref.:		TPC05	
		Client Sample ID.:		J3	
		Sample Type:		SOIL	
		Top Depth (m):		1.00	
		Date Sampled:		31-Jul-2017	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	180
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	280
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.73
Pyrene	U	2700	mg/kg	0.10	0.87
Benzo[a]anthracene	U	2700	mg/kg	0.10	0.61
Chrysene	U	2700	mg/kg	0.10	0.30
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	2.5
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-20200	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		492029	
Order No.: 2543, GI		Client Sample Ref.:		TPC05	
		Client Sample ID.:		J3	
		Sample Type:		SOIL	
		Top Depth (m):		1.00	
		Date Sampled:		31-Jul-2017	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20200
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				492029
Order No.: 2543, GI	Client Sample Ref.:				TPC05
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				1.00
	Date Sampled:				31-Jul-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50



<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-20200	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		492029	
Order No.: 2543, GI		Client Sample Ref.:		TPC05	
		Client Sample ID.:		J3	
		Sample Type:		SOIL	
		Top Depth (m):		1.00	
		Date Sampled:		31-Jul-2017	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	1.1
Pyrene	U	2790	mg/kg	0.50	1.0
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	0.93
Chrysene	U	2790	mg/kg	0.50	0.68
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	1.4
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	0.57
Benzo[a]pyrene	U	2790	mg/kg	0.50	0.68
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	0.54
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	0.63
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

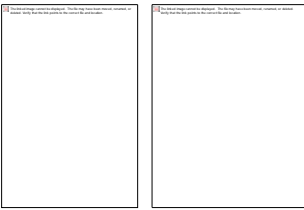
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-20201-1

**Initial Date of Issue:** 09-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 02-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 03-Aug-2017

**No. of Samples:** 2

**Turnaround (Wkdays):** 5 **Results Due:** 09-Aug-2017

**Date Approved:** 09-Aug-2017

**Approved By:**

**Details:** Robert Monk, Technical Development  
Chemist

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20201	17-20201	
Quotation No.: Q17-10179		Chemtest Sample ID.:		492035	492037	
Order No.: 2543, GI		Client Sample Ref.:		TPC103	TPC103	
		Client Sample ID.:		J2	J4	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.50	1.50	
		Date Sampled:		31-Jul-2017	31-Jul-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	10
pH	M	2010		N/A	7.4	7.2
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.2	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	28	2.9
Sulphate (Total)	M	2430	%	0.010	0.11	0.022
Arsenic	M	2450	mg/kg	1.0	8.2	< 1.0
Cadmium	M	2450	mg/kg	0.10	0.19	< 0.10
Chromium	M	2450	mg/kg	1.0	8.1	4.1
Copper	M	2450	mg/kg	0.50	100	3.7
Mercury	M	2450	mg/kg	0.10	0.34	< 0.10
Nickel	M	2450	mg/kg	0.50	10	3.0
Lead	M	2450	mg/kg	0.50	540	15
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	140	6.7
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	1.4	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	12	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	2.2	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	16	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	4.2	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	110	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20201	17-20201
Quotation No.: Q17-10179		Chemtest Sample ID.:		492035	492037
Order No.: 2543, GI		Client Sample Ref.:		TPC103	TPC103
		Client Sample ID.:		J2	J4
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.50	1.50
		Date Sampled:		31-Jul-2017	31-Jul-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	120 < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	130 < 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10 < 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10 < 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10 < 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10 < 0.10
Phenanthrene	M	2700	mg/kg	0.10	1.0 < 0.10
Anthracene	M	2700	mg/kg	0.10	0.21 < 0.10
Fluoranthene	M	2700	mg/kg	0.10	2.3 < 0.10
Pyrene	M	2700	mg/kg	0.10	2.0 < 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	2.7 < 0.10
Chrysene	M	2700	mg/kg	0.10	1.3 < 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	1.8 < 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.80 < 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	1.0 < 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.72 < 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.17 < 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.53 < 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	15 < 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0 < 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0 < 1.0
Bromomethane	M	2760	µg/kg	20	< 20 < 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0 < 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0 < 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0 < 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0 < 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0 < 1.0

**Project: 2543, GI Lake Lothing, Lowestoft**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20201	17-20201
Quotation No.: Q17-10179		Chemtest Sample ID.:		492035	492037
Order No.: 2543, GI		Client Sample Ref.:		TPC103	TPC103
		Client Sample ID.:		J2	J4
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.50	1.50
		Date Sampled:		31-Jul-2017	31-Jul-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Dibromomethane	M	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20201	17-20201
Quotation No.: Q17-10179		Chemtest Sample ID.:		492035	492037
Order No.: 2543, GI		Client Sample Ref.:		TPC103	TPC103
		Client Sample ID.:		J2	J4
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.50	1.50
		Date Sampled:		31-Jul-2017	31-Jul-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Phenol	M	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50



Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20201	17-20201
Quotation No.: Q17-10179		Chemtest Sample ID.:		492035	492037
Order No.: 2543, GI		Client Sample Ref.:		TPC103	TPC103
		Client Sample ID.:		J2	J4
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.50	1.50
		Date Sampled:		31-Jul-2017	31-Jul-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	1.8
Anthracene	M	2790	mg/kg	0.50	0.59
Carbazole	M	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	2.9
Pyrene	M	2790	mg/kg	0.50	2.1
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	1.4
Chrysene	M	2790	mg/kg	0.50	1.1
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	1.6
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	0.55
Benzo[a]pyrene	M	2790	mg/kg	0.50	0.77
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 180	M	2815	mg/kg	0.010	< 0.010

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		17-20201	17-20201	
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		492035	492037	
Order No.: 2543, GI	Client Sample Ref.:		TPC103	TPC103	
	Client Sample ID.:		J2	J4	
	Sample Type:		SOIL	SOIL	
	Top Depth (m):		0.50	1.50	
	Date Sampled:		31-Jul-2017	31-Jul-2017	
	Asbestos Lab:		COVENTRY	COVENTRY	
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

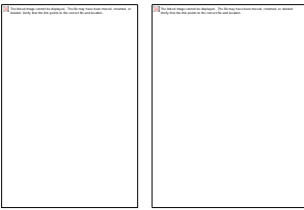
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 17-20560-1

**Initial Date of Issue:** 14-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 04-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 04-Aug-2017

**No. of Samples:** 3

**Turnaround (Wkdays):** 6 **Results Due:** 11-Aug-2017

**Date Approved:** 14-Aug-2017

**Approved By:**



**Details:** Martin Dyer, Laboratory Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20560	17-20560	
Quotation No.: Q17-10179		Chemtest Sample ID.:		493823	493826	
Order No.: 2543, GI		Client Sample Ref.:		TPC101	TPC06	
		Client Sample ID.:		J3	J3	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		1.80	1.10	
		Date Sampled:		01-Aug-2017	01-Aug-2017	
Determinand	Accred.	SOP	Units	LOD		
pH	U	1010		N/A	10.0	8.9
Ammonia (Free) as N	U	1220	mg/l	0.010	0.099	0.061
Sulphate	U	1220	mg/l	1.0	8.7	8.2
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	5.3	4.1
Boron (Dissolved)	U	1450	µg/l	20	< 20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	2.6	2.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	1.4
Selenium (Dissolved)	U	1450	µg/l	1.0	1.3	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0	2.1
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20560	17-20560
Quotation No.: Q17-10179		Chemtest Sample ID.:		493823	493826
Order No.: 2543, GI		Client Sample Ref.:		TPC101	TPC06
		Client Sample ID.:		J3	J3
		Sample Type:		SOIL	SOIL
		Top Depth (m):		1.80	1.10
		Date Sampled:		01-Aug-2017	01-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20560	17-20560
Quotation No.: Q17-10179		Chemtest Sample ID.:		493823	493826
Order No.: 2543, GI		Client Sample Ref.:		TPC101	TPC06
		Client Sample ID.:		J3	J3
		Sample Type:		SOIL	SOIL
		Top Depth (m):		1.80	1.10
		Date Sampled:		01-Aug-2017	01-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50



**Project: 2543, GI Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		17-20560	17-20560		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		493823	493826		
Order No.: 2543, GI	Client Sample Ref.:		TPC101	TPC06		
	Client Sample ID.:		J3	J3		
	Sample Type:		SOIL	SOIL		
	Top Depth (m):		1.80	1.10		
	Date Sampled:		01-Aug-2017	01-Aug-2017		
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>		
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	0.45	0.050

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-20560	17-20560	17-20560
Quotation No.: Q17-10179	Chemtest Sample ID.:				493823	493825	493826
Order No.: 2543, GI	Client Sample Ref.:				TPC101	TPC06	TPC06
	Client Sample ID.:				J3	J2	J3
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				1.80	0.70	1.10
	Date Sampled:				01-Aug-2017	01-Aug-2017	01-Aug-2017
	Asbestos Lab:				COVENTRY	COVENTRY	IN-TRANSIT
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	
Moisture	N	2030	%	0.020	17	13	17
pH	M	2010		N/A	9.9	8.2	8.5
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.66	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.027	0.11	0.13
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	< 0.50	6.9	3.6
Sulphate (Total)	M	2430	%	0.010	< 0.010	0.079	0.042
Arsenic	M	2450	mg/kg	1.0	< 1.0	14	8.6
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.16	0.11
Chromium	M	2450	mg/kg	1.0	3.0	10	11
Copper	M	2450	mg/kg	0.50	1.6	480	8.3
Mercury	M	2450	mg/kg	0.10	< 0.10	0.34	< 0.10
Nickel	M	2450	mg/kg	0.50	1.7	17	13
Lead	M	2450	mg/kg	0.50	11	110	12
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	7.8	230	23
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40			0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	2.9	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20560	17-20560	17-20560	
Quotation No.: Q17-10179		Chemtest Sample ID.:		493823	493825	493826	
Order No.: 2543, GI		Client Sample Ref.:		TPC101	TPC06	TPC06	
		Client Sample ID.:		J3	J2	J3	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		1.80	0.70	1.10	
		Date Sampled:		01-Aug-2017	01-Aug-2017	01-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	IN-TRANSIT	
Determinand	Accred.	SOP	Units	LOD			
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.91	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	0.98	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	1.0	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	0.49	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.78	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.39	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	0.91	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	5.5	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20560	17-20560	17-20560
Quotation No.: Q17-10179		Chemtest Sample ID.:		493823	493825	493826
Order No.: 2543, GI		Client Sample Ref.:		TPC101	TPC06	TPC06
		Client Sample ID.:		J3	J2	J3
		Sample Type:		SOIL	SOIL	SOIL
		Top Depth (m):		1.80	0.70	1.10
		Date Sampled:		01-Aug-2017	01-Aug-2017	01-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY	IN-TRANSIT
Determinand	Accred.	SOP	Units	LOD		
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20560	17-20560	17-20560	
Quotation No.: Q17-10179		Chemtest Sample ID.:		493823	493825	493826	
Order No.: 2543, GI		Client Sample Ref.:		TPC101	TPC06	TPC06	
		Client Sample ID.:		J3	J2	J3	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		1.80	0.70	1.10	
		Date Sampled:		01-Aug-2017	01-Aug-2017	01-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	IN-TRANSIT	
Determinand	Accred.	SOP	Units	LOD			
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

**Results - Soil**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20560	17-20560	17-20560	
Quotation No.: Q17-10179		Chemtest Sample ID.:		493823	493825	493826	
Order No.: 2543, GI		Client Sample Ref.:		TPC101	TPC06	TPC06	
		Client Sample ID.:		J3	J2	J3	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		1.80	0.70	1.10	
		Date Sampled:		01-Aug-2017	01-Aug-2017	01-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	IN-TRANSIT	
Determinand	Accred.	SOP	Units	LOD			
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 81	N	2815	mg/kg	0.010			< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 77	N	2815	mg/kg	0.010			< 0.010
PCB 105	N	2815	mg/kg	0.010			< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 114	N	2815	mg/kg	0.010			< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 118	N	2815	mg/kg	0.010			< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 123	N	2815	mg/kg	0.010			< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 126	N	2815	mg/kg	0.010			< 0.010

## Results - Soil

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b>		17-20560	17-20560	17-20560	
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		493823	493825	493826	
Order No.: 2543, GI	<b>Client Sample Ref.:</b>		TPC101	TPC06	TPC06	
	<b>Client Sample ID.:</b>		J3	J2	J3	
	<b>Sample Type:</b>		SOIL	SOIL	SOIL	
	<b>Top Depth (m):</b>		1.80	0.70	1.10	
	<b>Date Sampled:</b>		01-Aug-2017	01-Aug-2017	01-Aug-2017	
	<b>Asbestos Lab:</b>		COVENTRY	COVENTRY	IN-TRANSIT	
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>		
PCB 180	M	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.



SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-20561-1

**Initial Date of Issue:** 15-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 04-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 04-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 14-Aug-2017

**Date Approved:** 15-Aug-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

## Results - 2 Stage WAC

**Project: 2543, GI Lake Lothing, Lowestoft**

Chemtest Job No: 17-20561							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 493830							Limits			
Sample Ref: TPC06							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID: J3										
Top Depth(m): 1.10										
Bottom Depth(m):										
Sampling Date: 01-Aug-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				0.27	3	5	6
Loss On Ignition	2610	U	%				1.3	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.047	--	To evaluate	To evaluate
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.0030	0.0076	< 0.050	0.070	0.5	2	25	
Barium	1450	U	0.0095	0.013	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	< 0.0010	0.0016	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.0071	0.0044	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	< 0.0010	0.0029	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	< 0.0010	0.0045	< 0.010	0.039	0.5	10	50	
Antimony	1450	U	0.0025	0.0028	< 0.010	0.028	0.06	0.7	5	
Selenium	1450	U	0.0015	0.0023	< 0.010	0.022	0.1	0.5	7	
Zinc	1450	U	0.0015	0.0051	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	3.3	1.4	< 10	16	800	15000	25000	
Fluoride	1220	U	0.31	0.24	< 1.0	2.5	10	150	500	
Sulphate	1220	U	18	12	35	130	1000	20000	50000	
Total Dissolved Solids	1020	N	88	71	170	730	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	11	14	< 50	140	500	800	1000	

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	19

Leachate Test Information	
Leachant volume 1st extract/l	0.309
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.218

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-20562-1

**Initial Date of Issue:** 15-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 07-Aug-2017

**Order No.:** 2543 GI **Date Instructed:** 09-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 15-Aug-2017

**Date Approved:** 15-Aug-2017

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20562
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				493835
Order No.: 2543 GI	Client Sample Ref.:				BHC06
	Client Sample ID.:				J5
	Sample Type:				SOIL
	Top Depth (m):				2.00
	Date Sampled:				01-Aug-2017
	Asbestos Lab:				COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	18
pH	U	2010		N/A	8.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.43
Sulphate (2:1 Water Soluble) as SO <sub>4</sub>	U	2120	g/l	0.010	0.15
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	2.4
Sulphate (Total)	U	2430	%	0.010	0.22
Arsenic	U	2450	mg/kg	1.0	8.9
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	6.2
Copper	U	2450	mg/kg	0.50	5.2
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	6.4
Lead	U	2450	mg/kg	0.50	54
Selenium	U	2450	mg/kg	0.20	0.51
Zinc	U	2450	mg/kg	0.50	16
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	0.81
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20562
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				493835
Order No.: 2543 GI	Client Sample Ref.:				BHC06
	Client Sample ID.:				J5
	Sample Type:				SOIL
	Top Depth (m):				2.00
	Date Sampled:				01-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-20562	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		493835	
Order No.: 2543 GI		Client Sample Ref.:		BHC06	
		Client Sample ID.:		J5	
		Sample Type:		SOIL	
		Top Depth (m):		2.00	
		Date Sampled:		01-Aug-2017	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	1.9
m & p-Xylene	U	2760	µg/kg	1.0	3.4
o-Xylene	U	2760	µg/kg	1.0	2.2
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	2.7
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	8.8
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	8.1
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0

**Project: 2543, GI Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-20562	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		493835	
Order No.: 2543 GI		Client Sample Ref.:		BHC06	
		Client Sample ID.:		J5	
		Sample Type:		SOIL	
		Top Depth (m):		2.00	
		Date Sampled:		01-Aug-2017	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20562
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				493835
Order No.: 2543 GI	Client Sample Ref.:				BHC06
	Client Sample ID.:				J5
	Sample Type:				SOIL
	Top Depth (m):				2.00
	Date Sampled:				01-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

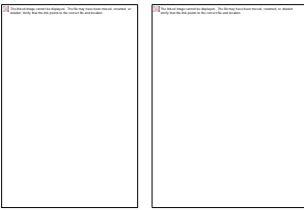
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 17-20669-1

**Initial Date of Issue:** 15-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543.91 Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 07-Aug-2017

**Order No.:** 2543.91 **Date Instructed:** 09-Aug-2017

**No. of Samples:** 4

**Turnaround (Wkdays):** 5 **Results Due:** 15-Aug-2017

**Date Approved:** 15-Aug-2017

**Approved By:**



**Details:** Keith Jones, Technical Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20669
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				494333
Order No.: 2543.91	Client Sample Ref.:				TPC01
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.20
	Date Sampled:				03-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.1
Ammonia (Free) as N	U	1220	mg/l	0.010	< 0.010
Sulphate	U	1220	mg/l	1.0	1.1
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.7
Boron (Dissolved)	U	1450	µg/l	20	27
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	4.2
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.2
Lead (Dissolved)	U	1450	µg/l	1.0	6.3
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	11
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10



<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-20669	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		494333	
Order No.: 2543.91		Client Sample Ref.:		TPC01	
		Client Sample ID.:		J1	
		Sample Type:		SOIL	
		Top Depth (m):		0.20	
		Date Sampled:		03-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 17-20669				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 494333				
Order No.: 2543.91	Client Sample Ref.: TPC01				
	Client Sample ID.: J1				
	Sample Type: SOIL				
	Top Depth (m): 0.20				
	Date Sampled: 03-Aug-2017				
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

**Project: 2543.91 Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-20669				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 494333				
Order No.: 2543.91	Client Sample Ref.: TPC01				
	Client Sample ID.: J1				
	Sample Type: SOIL				
	Top Depth (m): 0.20				
	Date Sampled: 03-Aug-2017				
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20669	17-20669	17-20669	17-20669
Quotation No.: Q17-10179		Chemtest Sample ID.:		494325	494329	494331	494333
Order No.: 2543.91		Client Sample Ref.:		TPC03	TPC04	TPC04	TPC01
		Client Sample ID.:		J2	J2	J4	J1
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.80	0.55	2.20	0.20
		Date Sampled:		03-Aug-2017	03-Aug-2017	03-Aug-2017	03-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	2.8	16	7.0
pH	M	2010		N/A	8.3	9.8	8.8
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	0.072	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	1.8	2.0	1.5
Sulphate (Total)	M	2430	%	0.010	< 0.010	0.13	0.010
Arsenic	M	2450	mg/kg	1.0	4.6	17	7.6
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.14	< 0.10
Chromium	M	2450	mg/kg	1.0	4.2	21	12
Copper	M	2450	mg/kg	0.50	1.5	66	7.8
Mercury	M	2450	mg/kg	0.10	< 0.10	0.30	0.10
Nickel	M	2450	mg/kg	0.50	3.3	24	11
Lead	M	2450	mg/kg	0.50	14	110	11
Selenium	M	2450	mg/kg	0.20	0.29	0.57	0.28
Zinc	M	2450	mg/kg	0.50	11	59	18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40		17	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	1.6	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	57	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	59	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	1.4	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	25	< 1.0

**Results - Soil**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20669	17-20669	17-20669	17-20669
Quotation No.: Q17-10179		Chemtest Sample ID.:		494325	494329	494331	494333
Order No.: 2543.91		Client Sample Ref.:		TPC03	TPC04	TPC04	TPC01
		Client Sample ID.:		J2	J2	J4	J1
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.80	0.55	2.20	0.20
		Date Sampled:		03-Aug-2017	03-Aug-2017	03-Aug-2017	03-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	27	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	85	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.37	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.13	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.27	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	1.5	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.32	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	2.1	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	2.3	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	1.1	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.3	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.52	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	1.0	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	0.40	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	0.25	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	13	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

**Results - Soil**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20669	17-20669	17-20669	17-20669
Quotation No.: Q17-10179		Chemtest Sample ID.:		494325	494329	494331	494333
Order No.: 2543.91		Client Sample Ref.:		TPC03	TPC04	TPC04	TPC01
		Client Sample ID.:		J2	J2	J4	J1
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.80	0.55	2.20	0.20
		Date Sampled:		03-Aug-2017	03-Aug-2017	03-Aug-2017	03-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20669	17-20669	17-20669	17-20669
Quotation No.: Q17-10179		Chemtest Sample ID.:		494325	494329	494331	494333
Order No.: 2543.91		Client Sample Ref.:		TPC03	TPC04	TPC04	TPC01
		Client Sample ID.:		J2	J2	J4	J1
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.80	0.55	2.20	0.20
		Date Sampled:		03-Aug-2017	03-Aug-2017	03-Aug-2017	03-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-20669	17-20669	17-20669	17-20669
Quotation No.: Q17-10179		Chemtest Sample ID.:		494325	494329	494331	494333
Order No.: 2543.91		Client Sample Ref.:		TPC03	TPC04	TPC04	TPC01
		Client Sample ID.:		J2	J2	J4	J1
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.80	0.55	2.20	0.20
		Date Sampled:		03-Aug-2017	03-Aug-2017	03-Aug-2017	03-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	1.5	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50	0.69	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	3.0	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50	2.7	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	1.9	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50	1.4	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	2.1	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	0.88	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	1.4	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010		< 0.010	< 0.010
PCB 81	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 52	M	2815	mg/kg	0.010		< 0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 90+101	M	2815	mg/kg	0.010		< 0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 118	M	2815	mg/kg	0.010		< 0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 153	M	2815	mg/kg	0.010		< 0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 138	M	2815	mg/kg	0.010		< 0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010		< 0.010



## Results - Soil

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20669	17-20669	17-20669	17-20669
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				494325	494329	494331	494333
Order No.: 2543.91	<b>Client Sample Ref.:</b>				TPC03	TPC04	TPC04	TPC01
	<b>Client Sample ID.:</b>				J2	J2	J4	J1
	<b>Sample Type:</b>				SOIL	SOIL	SOIL	SOIL
	<b>Top Depth (m):</b>				0.80	0.55	2.20	0.20
	<b>Date Sampled:</b>				03-Aug-2017	03-Aug-2017	03-Aug-2017	03-Aug-2017
	<b>Asbestos Lab:</b>				COVENTRY	COVENTRY	COVENTRY	COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>				
PCB 180	M	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 157	N	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 167	N	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 169	N	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 189	N	2815	mg/kg	0.010	< 0.010		< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12		< 0.12	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10		< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

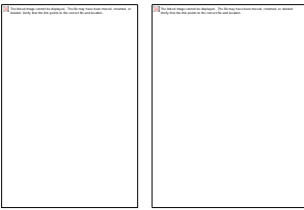
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 17-20779-1

**Initial Date of Issue:** 15-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543 GI, Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 08-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 09-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 15-Aug-2017

**Date Approved:** 15-Aug-2017

**Approved By:**



**Details:** Keith Jones, Technical Manager

---

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 17-20779				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 494807				
Order No.: 2543, GI	Client Sample Ref.:		TPC102		
	Client Sample ID.:		J2		
	Sample Type:		SOIL		
	Top Depth (m):		0.50		
	Date Sampled:		04-Aug-2017		
	Asbestos Lab:		COVENTRY		
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	2.6
pH	M	2010		N/A	7.5
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.65
Sulphate (2:1 Water Soluble) as SO <sub>4</sub>	M	2120	g/l	0.010	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	1.6
Sulphate (Total)	M	2430	%	0.010	< 0.010
Arsenic	M	2450	mg/kg	1.0	4.8
Cadmium	M	2450	mg/kg	0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	4.0
Copper	M	2450	mg/kg	0.50	1.8
Mercury	M	2450	mg/kg	0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	2.9
Lead	M	2450	mg/kg	0.50	5.2
Selenium	M	2450	mg/kg	0.20	0.48
Zinc	M	2450	mg/kg	0.50	11
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-20779	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		494807	
Order No.: 2543, GI		Client Sample Ref.:		TPC102	
		Client Sample ID.:		J2	
		Sample Type:		SOIL	
		Top Depth (m):		0.50	
		Date Sampled:		04-Aug-2017	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.16
Pyrene	M	2700	mg/kg	0.10	0.20
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20779
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				494807
Order No.: 2543, GI	Client Sample Ref.:				TPC102
	Client Sample ID.:				J2
	Sample Type:				SOIL
	Top Depth (m):				0.50
	Date Sampled:				04-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Dibromomethane	M	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-20779
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				494807
Order No.: 2543, GI	Client Sample Ref.:				TPC102
	Client Sample ID.:				J2
	Sample Type:				SOIL
	Top Depth (m):				0.50
	Date Sampled:				04-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Phenol	M	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-20779	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		494807	
Order No.: 2543, GI		Client Sample Ref.:		TPC102	
		Client Sample ID.:		J2	
		Sample Type:		SOIL	
		Top Depth (m):		0.50	
		Date Sampled:		04-Aug-2017	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010
PCB 180	M	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-20903-1

**Initial Date of Issue:** 17-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 09-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 09-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 17-Aug-2017

**Date Approved:** 17-Aug-2017

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

## Results - 2 Stage WAC

**Project: 2543, GI Lake Lothing, Lowestoft**

Chemtest Job No: 17-20903							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 495407							Limits			
Sample Ref: TPC03							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID:										
Top Depth(m): 0.80										
Bottom Depth(m):										
Sampling Date: 03-Aug-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				< 0.20	3	5	6
Loss On Ignition	2610	U	%				0.55	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.0080	--	To evaluate	To evaluate
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.0068	0.0020	< 0.050	< 0.050	0.5	2	25	
Barium	1450	U	0.011	0.0032	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	0.0044	< 0.0010	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	0.0045	0.0016	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.0016	< 0.0010	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	0.0044	0.0011	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	0.0093	0.0021	0.019	0.030	0.5	10	50	
Antimony	1450	U	0.0090	0.0018	0.018	0.027	0.06	0.7	5	
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7	
Zinc	1450	U	0.016	0.0045	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	2.1	< 1.0	< 10	< 10	800	15000	25000	
Fluoride	1220	U	0.29	0.12	< 1.0	1.4	10	150	500	
Sulphate	1220	U	1.9	< 1.0	< 10	< 10	1000	20000	50000	
Total Dissolved Solids	1020	N	41	14	82	170	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	17	13	< 50	140	500	800	1000	

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	2.7

Leachate Test Information	
Leachant volume 1st extract/l	0.345
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.207

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)





# Final Report

---

**Report No.:** 17-21231-1

**Initial Date of Issue:** 01-Sep-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 14-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 23-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 30-Aug-2017

**Date Approved:** 01-Sep-2017

**Approved By:**

**Details:** Robert Monk, Technical Development  
Chemist

---

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21231
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				496746
Order No.: 2543, GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.25
	Date Sampled:				10-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	11.0
Ammonia (Free) as N	U	1220	mg/l	0.010	0.089
Sulphate	U	1220	mg/l	1.0	45
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.4
Boron (Dissolved)	U	1450	µg/l	20	210
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	7.4
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	2.8
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21231
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				496746
Order No.: 2543, GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.25
	Date Sampled:				10-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21231
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				496746
Order No.: 2543, GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.25
	Date Sampled:				10-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-21231				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 496746				
Order No.: 2543, GI	Client Sample Ref.: BHC02				
	Client Sample ID.: J1				
	Sample Type: SOIL				
	Top Depth (m): 0.25				
	Date Sampled: 10-Aug-2017				
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21231
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				496746
Order No.: 2543, GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.25
	Date Sampled:				10-Aug-2017
	Asbestos Lab:				COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	9.0
pH	U	2010		N/A	11.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	4.2
Sulphate (2:1 Water Soluble) as SO <sub>4</sub>	U	2120	g/l	0.010	0.41
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	0.89
Sulphate (Total)	U	2430	%	0.010	0.20
Arsenic	U	2450	mg/kg	1.0	8.1
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	15
Copper	U	2450	mg/kg	0.50	27
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	14
Lead	U	2450	mg/kg	0.50	27
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	40
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21231
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				496746
Order No.: 2543, GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.25
	Date Sampled:				10-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	0.82
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.66
Pyrene	U	2700	mg/kg	0.10	0.79
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	2.3
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21231
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				496746
Order No.: 2543, GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.25
	Date Sampled:				10-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50



**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21231
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				496746
Order No.: 2543, GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.25
	Date Sampled:				10-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21231
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				496746
Order No.: 2543, GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.25
	Date Sampled:				10-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

<b>Sample ID:</b>	<b>Sample Ref:</b>	<b>Sample ID:</b>	<b>Sampled Date:</b>	<b>Deviation Code(s):</b>	<b>Containers Received:</b>
496746	BHC02	J1	10-Aug-2017	B	Amber Glass 250ml
496746	BHC02	J1	10-Aug-2017	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44 Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

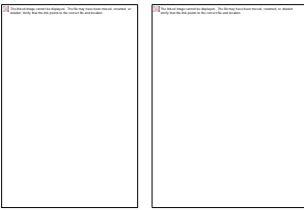
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-21370-1

**Initial Date of Issue:** 30-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2546, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 15-Aug-2017

**Order No.:** 2546. GI **Date Instructed:** 23-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 30-Aug-2017

**Date Approved:** 30-Aug-2017

**Approved By:**

**Details:** Robert Monk, Technical Development  
Chemist

---

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-21370	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		497442	
Order No.: 2546. GI		Client Sample Ref.:		BHC02	
		Client Sample ID.:		J7	
		Sample Type:		SOIL	
		Top Depth (m):		3	
		Date Sampled:		11-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
Moisture	N	2030	%	0.020	13
pH	M	2010		N/A	8.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.014
Cyanide (Free)	M	2300	mg/kg	0.50	0.70
Cyanide (Total)	M	2300	mg/kg	0.50	8.4
Ammonium (Extractable)	M	2425	mg/kg	0.50	< 0.50
Sulphate (Total)	M	2430	%	0.010	0.049
Arsenic	M	2450	mg/kg	1.0	< 1.0
Cadmium	M	2450	mg/kg	0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	4.3
Copper	M	2450	mg/kg	0.50	3.5
Mercury	M	2450	mg/kg	0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	2.7
Lead	M	2450	mg/kg	0.50	4.8
Selenium	M	2450	mg/kg	0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	8.8
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	M	2625	%	0.40	< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10



Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21370	
Quotation No.: Q17-10179		Chemtest Sample ID.:		497442	
Order No.: 2546. GI		Client Sample Ref.:		BHC02	
		Client Sample ID.:		J7	
		Sample Type:		SOIL	
		Top Depth (m):		3	
		Date Sampled:		11-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0

**Project: 2546, GI Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-21370	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		497442	
Order No.: 2546. GI		Client Sample Ref.:		BHC02	
		Client Sample ID.:		J7	
		Sample Type:		SOIL	
		Top Depth (m):		3	
		Date Sampled:		11-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21370
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				497442
Order No.: 2546. GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				J7
	Sample Type:				SOIL
	Top Depth (m):				3
	Date Sampled:				11-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21370
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				497442
Order No.: 2546. GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				J7
	Sample Type:				SOIL
	Top Depth (m):				3
	Date Sampled:				11-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010
PCB 180	M	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

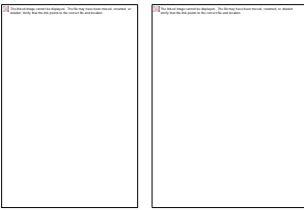
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-21712-1

**Initial Date of Issue:** 31-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543.GI Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 17-Aug-2017

**Order No.:** 2543, G1 **Date Instructed:** 23-Aug-2017

**No. of Samples:** 2

**Turnaround (Wkdays):** 5 **Results Due:** 30-Aug-2017

**Date Approved:** 31-Aug-2017

**Approved By:**



**Details:** Robert Monk, Technical Development  
Chemist

---

**Project: 2543.GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21712
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				499158
Order No.: 2543, G1	Client Sample Ref.:				IPC01
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.30
	Date Sampled:				15-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.3
Ammonia (Free) as N	U	1220	mg/l	0.010	0.023
Sulphate	U	1220	mg/l	1.0	23
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	8.5
Boron (Dissolved)	U	1450	µg/l	20	22
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.11
Chromium (Dissolved)	U	1450	µg/l	1.0	1.5
Copper (Dissolved)	U	1450	µg/l	1.0	10
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	4.4
Lead (Dissolved)	U	1450	µg/l	1.0	25
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	20
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10



**Project: 2543.GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-21712	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		499158	
Order No.: 2543, G1		Client Sample Ref.:		IPC01	
		Client Sample ID.:		J1	
		Sample Type:		SOIL	
		Top Depth (m):		0.30	
		Date Sampled:		15-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

**Project: 2543.GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21712
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				499158
Order No.: 2543, G1	Client Sample Ref.:				IPC01
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.30
	Date Sampled:				15-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

**Project: 2543.GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-21712			
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 499158			
Order No.: 2543, G1	Client Sample Ref.: IPC01			
	Client Sample ID.: J1			
	Sample Type: SOIL			
	Top Depth (m): 0.30			
	Date Sampled: 15-Aug-2017			
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>
Benzo[g,h,i]perylene	N	1790	µg/l	0.50 < 0.50
Total Phenols	U	1920	mg/l	0.030 < 0.030

**Project: 2543.GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21712	17-21712	
Quotation No.: Q17-10179		Chemtest Sample ID.:		499158	499163	
Order No.: 2543, G1		Client Sample Ref.:		IPC01	IPC02	
		Client Sample ID.:		J1	J2	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.30	0.60	
		Date Sampled:		15-Aug-2017	15-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	2.1	1.8
pH	M	2010		N/A	7.8	7.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.5	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.014	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	3.1	0.75
Sulphate (Total)	M	2430	%	0.010	0.13	< 0.010
Arsenic	M	2450	mg/kg	1.0	12	2.1
Cadmium	M	2450	mg/kg	0.10	0.78	0.12
Chromium	M	2450	mg/kg	1.0	62	4.7
Copper	M	2450	mg/kg	0.50	35	6.6
Mercury	M	2450	mg/kg	0.10	0.11	< 0.10
Nickel	M	2450	mg/kg	0.50	18	4.3
Lead	M	2450	mg/kg	0.50	170	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	130	42
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	47	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	47	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	2.4	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	13	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	36	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	200	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0

**Project: 2543.GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21712	17-21712
Quotation No.: Q17-10179		Chemtest Sample ID.:		499158	499163
Order No.: 2543, G1		Client Sample Ref.:		IPC01	IPC02
		Client Sample ID.:		J1	J2
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.30	0.60
		Date Sampled:		15-Aug-2017	15-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	250 < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	300 < 10
Naphthalene	M	2700	mg/kg	0.10	3.1 < 0.10
Acenaphthylene	M	2700	mg/kg	0.10	1.9 < 0.10
Acenaphthene	M	2700	mg/kg	0.10	5.7 < 0.10
Fluorene	M	2700	mg/kg	0.10	5.8 < 0.10
Phenanthrene	M	2700	mg/kg	0.10	30 0.15
Anthracene	M	2700	mg/kg	0.10	8.8 < 0.10
Fluoranthene	M	2700	mg/kg	0.10	30 0.38
Pyrene	M	2700	mg/kg	0.10	29 0.33
Benzo[a]anthracene	M	2700	mg/kg	0.10	12 < 0.10
Chrysene	M	2700	mg/kg	0.10	16 < 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	14 < 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	6.4 < 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	12 < 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	7.8 < 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	5.1 < 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	9.3 < 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	200 < 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0 < 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0 < 1.0
Bromomethane	M	2760	µg/kg	20	< 20 < 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0 < 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0 < 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0 < 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0 < 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0 < 1.0

**Project: 2543.GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21712	17-21712
Quotation No.: Q17-10179		Chemtest Sample ID.:		499158	499163
Order No.: 2543, G1		Client Sample Ref.:		IPC01	IPC02
		Client Sample ID.:		J1	J2
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.30	0.60
		Date Sampled:		15-Aug-2017	15-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Dibromomethane	M	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50

**Project: 2543.GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21712	17-21712
Quotation No.: Q17-10179		Chemtest Sample ID.:		499158	499163
Order No.: 2543, G1		Client Sample Ref.:		IPC01	IPC02
		Client Sample ID.:		J1	J2
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.30	0.60
		Date Sampled:		15-Aug-2017	15-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Phenol	M	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	0.75
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	1.1
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	1.6
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	1.5
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	1.6

**Project: 2543.GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21712	17-21712
Quotation No.: Q17-10179		Chemtest Sample ID.:		499158	499163
Order No.: 2543, G1		Client Sample Ref.:		IPC01	IPC02
		Client Sample ID.:		J1	J2
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.30	0.60
		Date Sampled:		15-Aug-2017	15-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	9.3
Anthracene	M	2790	mg/kg	0.50	2.9
Carbazole	M	2790	mg/kg	0.50	1.3
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	5.0
Fluoranthene	M	2790	mg/kg	0.50	9.9
Pyrene	M	2790	mg/kg	0.50	8.0
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	4.4
Chrysene	M	2790	mg/kg	0.50	4.0
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	4.9
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	1.7
Benzo[a]pyrene	M	2790	mg/kg	0.50	4.0
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 180	M	2815	mg/kg	0.010	< 0.010



**Project: 2543.GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		17-21712	17-21712	
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		499158	499163	
Order No.: 2543, G1	Client Sample Ref.:		IPC01	IPC02	
	Client Sample ID.:		J1	J2	
	Sample Type:		SOIL	SOIL	
	Top Depth (m):		0.30	0.60	
	Date Sampled:		15-Aug-2017	15-Aug-2017	
	Asbestos Lab:		COVENTRY	COVENTRY	
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30

### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

<b>Sample ID:</b>	<b>Sample Ref:</b>	<b>Sample ID:</b>	<b>Sampled Date:</b>	<b>Deviation Code(s):</b>	<b>Containers Received:</b>
499158	IPC01	J1	15-Aug-2017	B	Amber Glass 250ml
499158	IPC01	J1	15-Aug-2017	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44 Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

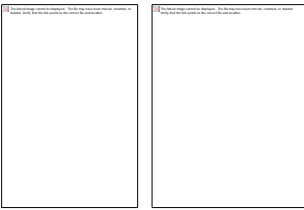
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-21913-1

**Initial Date of Issue:** 31-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2547 GI Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 18-Aug-2017

**Order No.:** 2543 GI **Date Instructed:** 23-Aug-2017

**No. of Samples:** 3

**Turnaround (Wkdays):** 5 **Results Due:** 30-Aug-2017

**Date Approved:** 31-Aug-2017

**Approved By:**

**Details:** Robert Monk, Technical Development  
Chemist

---

**Project: 2547 GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21913
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				500003
Order No.: 2543 GI	Client Sample Ref.:				IPC05
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				1.20
	Date Sampled:				16-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	0.019
Sulphate	U	1220	mg/l	1.0	< 1.0
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.7
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	3.2
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	2.2
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	4.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

**Project: 2547 GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21913	
Quotation No.: Q17-10179		Chemtest Sample ID.:		500003	
Order No.: 2543 GI		Client Sample Ref.:		IPC05	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		1.20	
		Date Sampled:		16-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50



**Project: 2547 GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21913
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				500003
Order No.: 2543 GI	Client Sample Ref.:				IPC05
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				1.20
	Date Sampled:				16-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

**Project: 2547 GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-21913				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 500003				
Order No.: 2543 GI	Client Sample Ref.: IPC05				
	Client Sample ID.: J4				
	Sample Type: SOIL				
	Top Depth (m): 1.20				
	Date Sampled: 16-Aug-2017				
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

**Project: 2547 GI Lake Lothing**

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-21913	17-21913	17-21913
Quotation No.: Q17-10179	Chemtest Sample ID.:				499994	499998	500003
Order No.: 2543 GI	Client Sample Ref.:				IPC03	IPC04	IPC05
	Client Sample ID.:				J3	J3	J4
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.90	0.90	1.20
	Date Sampled:				16-Aug-2017	16-Aug-2017	16-Aug-2017
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	4.3	4.4	1.9
pH	M	2010		N/A	7.6	7.7	7.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.44	0.84	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	4.7	5.9	3.1
Sulphate (Total)	M	2430	%	0.010	0.017	0.040	< 0.010
Arsenic	M	2450	mg/kg	1.0	4.8	7.0	< 1.0
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	6.6	6.9	3.5
Copper	M	2450	mg/kg	0.50	3.3	11	4.8
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	4.8	6.9	2.8
Lead	M	2450	mg/kg	0.50	9.8	44	7.8
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	14	36	17
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	7.3	13	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	2.3	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

**Project: 2547 GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21913	17-21913	17-21913	
Quotation No.: Q17-10179		Chemtest Sample ID.:		499994	499998	500003	
Order No.: 2543 GI		Client Sample Ref.:		IPC03	IPC04	IPC05	
		Client Sample ID.:		J3	J3	J4	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		0.90	0.90	1.20	
		Date Sampled:		16-Aug-2017	16-Aug-2017	16-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	7.3	15	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	15	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	0.62	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.20	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	0.96	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	0.55	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.55	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.15	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	0.31	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	5.7	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-21913	17-21913	17-21913
Quotation No.: Q17-10179	Chemtest Sample ID.:				499994	499998	500003
Order No.: 2543 GI	Client Sample Ref.:				IPC03	IPC04	IPC05
	Client Sample ID.:				J3	J3	J4
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.90	0.90	1.20
	Date Sampled:				16-Aug-2017	16-Aug-2017	16-Aug-2017
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

**Project: 2547 GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21913	17-21913	17-21913	
Quotation No.: Q17-10179		Chemtest Sample ID.:		499994	499998	500003	
Order No.: 2543 GI		Client Sample Ref.:		IPC03	IPC04	IPC05	
		Client Sample ID.:		J3	J3	J4	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		0.90	0.90	1.20	
		Date Sampled:		16-Aug-2017	16-Aug-2017	16-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21913	17-21913	17-21913	
Quotation No.: Q17-10179		Chemtest Sample ID.:		499994	499998	500003	
Order No.: 2543 GI		Client Sample Ref.:		IPC03	IPC04	IPC05	
		Client Sample ID.:		J3	J3	J4	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		0.90	0.90	1.20	
		Date Sampled:		16-Aug-2017	16-Aug-2017	16-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 81	N	2815	mg/kg	0.010		< 0.010	
PCB 52	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 77	N	2815	mg/kg	0.010		< 0.010	
PCB 105	N	2815	mg/kg	0.010		< 0.010	
PCB 90+101	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 114	N	2815	mg/kg	0.010		< 0.010	
PCB 118	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 118	N	2815	mg/kg	0.010		< 0.010	
PCB 153	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 123	N	2815	mg/kg	0.010		< 0.010	
PCB 138	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 126	N	2815	mg/kg	0.010		< 0.010	
PCB 180	M	2815	mg/kg	0.010	< 0.010		< 0.010

**Project: 2547 GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21913	17-21913	17-21913
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				499994	499998	500003
Order No.: 2543 GI	<b>Client Sample Ref.:</b>				IPC03	IPC04	IPC05
	<b>Client Sample ID.:</b>				J3	J3	J4
	<b>Sample Type:</b>				SOIL	SOIL	SOIL
	<b>Top Depth (m):</b>				0.90	0.90	1.20
	<b>Date Sampled:</b>				16-Aug-2017	16-Aug-2017	16-Aug-2017
	<b>Asbestos Lab:</b>				COVENTRY	COVENTRY	COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>			
PCB 156	N	2815	mg/kg	0.010		< 0.010	
PCB 157	N	2815	mg/kg	0.010		< 0.010	
PCB 167	N	2815	mg/kg	0.010		< 0.010	
PCB 169	N	2815	mg/kg	0.010		< 0.010	
PCB 189	N	2815	mg/kg	0.010		< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10		< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30



SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44 Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-21942-1

**Initial Date of Issue:** 30-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 21-Aug-2017

**Order No.:** 2543,GI **Date Instructed:** 23-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 30-Aug-2017

**Date Approved:** 30-Aug-2017

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21942
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				500182
Order No.: 2543,GI	Client Sample Ref.:				BHC03
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				1.30
	Date Sampled:				15-Aug-2017
	Asbestos Lab:				COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	9.4
pH	U	2010		N/A	7.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO <sub>4</sub>	U	2120	g/l	0.010	0.059
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	5.5
Ammonium (Extractable)	U	2425	mg/kg	0.50	0.62
Sulphate (Total)	U	2430	%	0.010	0.047
Arsenic	U	2450	mg/kg	1.0	< 1.0
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	2.4
Copper	U	2450	mg/kg	0.50	0.99
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	2.5
Lead	U	2450	mg/kg	0.50	3.7
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	7.5
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21942
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				500182
Order No.: 2543,GI	Client Sample Ref.:				BHC03
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				1.30
	Date Sampled:				15-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		17-21942		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		500182		
Order No.: 2543,GI	Client Sample Ref.:		BHC03		
	Client Sample ID.:		J4		
	Sample Type:		SOIL		
	Top Depth (m):		1.30		
	Date Sampled:		15-Aug-2017		
	Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21942
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				500182
Order No.: 2543,GI	Client Sample Ref.:				BHC03
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				1.30
	Date Sampled:				15-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50



**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21942
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				500182
Order No.: 2543,GI	Client Sample Ref.:				BHC03
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				1.30
	Date Sampled:				15-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

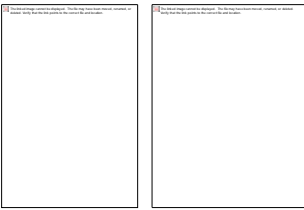
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 17-21969-1

**Initial Date of Issue:** 31-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 21-Aug-2017

**Order No.:** 2543,GI **Date Instructed:** 24-Aug-2017

**No. of Samples:** 2

**Turnaround (Wkdays):** 5 **Results Due:** 31-Aug-2017

**Date Approved:** 31-Aug-2017

**Approved By:**



**Details:** Robert Monk, Technical Development  
Chemist

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21969	17-21969	
Quotation No.: Q17-10179		Chemtest Sample ID.:		500309	500311	
Order No.: 2543,GI		Client Sample Ref.:		TPC02	TPC21	
		Client Sample ID.:		J1	J2	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.30	0.25	
		Date Sampled:		17-Aug-2017	17-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	Cement	-
Asbestos Identification	U	2192	%	0.001	Chrysotile	No Asbestos Detected
Moisture	N	2030	%	0.020	3.4	9.2
pH	M	2010		N/A	11.8	9.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.44	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.17	0.013
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	< 0.50	0.78
Sulphate (Total)	M	2430	%	0.010	0.67	0.11
Arsenic	M	2450	mg/kg	1.0	15	11
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.13
Chromium	M	2450	mg/kg	1.0	25	13
Copper	M	2450	mg/kg	0.50	14	11
Mercury	M	2450	mg/kg	0.10	0.11	0.17
Nickel	M	2450	mg/kg	0.50	14	11
Lead	M	2450	mg/kg	0.50	45	53
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	47	58
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	52
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	52
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	7.8	4.2
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	260
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21969	17-21969
Quotation No.: Q17-10179		Chemtest Sample ID.:		500309	500311
Order No.: 2543,GI		Client Sample Ref.:		TPC02	TPC21
		Client Sample ID.:		J1	J2
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.30	0.25
		Date Sampled:		17-Aug-2017	17-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	7.8 270
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10 320
Naphthalene	M	2700	mg/kg	0.10	< 0.10 0.16
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10 0.37
Acenaphthene	M	2700	mg/kg	0.10	< 0.10 0.23
Fluorene	M	2700	mg/kg	0.10	< 0.10 0.40
Phenanthrene	M	2700	mg/kg	0.10	< 0.10 1.8
Anthracene	M	2700	mg/kg	0.10	< 0.10 0.80
Fluoranthene	M	2700	mg/kg	0.10	0.34 4.7
Pyrene	M	2700	mg/kg	0.10	0.18 4.4
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10 2.8
Chrysene	M	2700	mg/kg	0.10	< 0.10 2.8
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10 3.8
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10 1.5
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10 3.4
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10 2.2
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10 0.70
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10 2.5
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0 33
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0 < 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0 < 1.0
Bromomethane	M	2760	µg/kg	20	< 20 < 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0 < 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0 < 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0 < 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0 < 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0 < 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0 < 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21969	17-21969
Quotation No.: Q17-10179		Chemtest Sample ID.:		500309	500311
Order No.: 2543,GI		Client Sample Ref.:		TPC02	TPC21
		Client Sample ID.:		J1	J2
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.30	0.25
		Date Sampled:		17-Aug-2017	17-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Dibromomethane	M	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21969	17-21969
Quotation No.: Q17-10179		Chemtest Sample ID.:		500309	500311
Order No.: 2543,GI		Client Sample Ref.:		TPC02	TPC21
		Client Sample ID.:		J1	J2
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.30	0.25
		Date Sampled:		17-Aug-2017	17-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Phenol	M	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50



Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-21969	17-21969
Quotation No.: Q17-10179		Chemtest Sample ID.:		500309	500311
Order No.: 2543,GI		Client Sample Ref.:		TPC02	TPC21
		Client Sample ID.:		J1	J2
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.30	0.25
		Date Sampled:		17-Aug-2017	17-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 180	M	2815	mg/kg	0.010	< 0.010

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-21969	17-21969
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				500309	500311
Order No.: 2543,GI	Client Sample Ref.:				TPC02	TPC21
	Client Sample ID.:				J1	J2
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.30	0.25
	Date Sampled:				17-Aug-2017	17-Aug-2017
	Asbestos Lab:				COVENTRY	COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>		
PCB 156	N	2815	mg/kg	0.010	< 0.010	
PCB 157	N	2815	mg/kg	0.010	< 0.010	
PCB 167	N	2815	mg/kg	0.010	< 0.010	
PCB 169	N	2815	mg/kg	0.010	< 0.010	
PCB 189	N	2815	mg/kg	0.010	< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-22275-1

**Initial Date of Issue:** 01-Sep-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 23-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 23-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 01-Sep-2017

**Date Approved:** 01-Sep-2017

**Approved By:**

**Details:** Robert Monk, Technical Development  
Chemist

---

## Results - 2 Stage WAC

**Project: 2543, GI Lake Lothing**

Chemtest Job No: 17-22275							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 501892							Limits			
Sample Ref: IPC02							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID:										
Top Depth(m): 0.60										
Bottom Depth(m):										
Sampling Date: 15-Aug-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				0.76	3	5	6
Loss On Ignition	2610	U	%				1.0	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					7.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.025	--	To evaluate	To evaluate
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.0019	0.0032	< 0.050	< 0.050	0.5	2	25	
Barium	1450	U	0.011	0.026	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	0.00022	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	0.0039	0.0064	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.0023	0.0013	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	< 0.0010	0.0011	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	0.0045	0.031	< 0.010	0.28	0.5	10	50	
Antimony	1450	U	0.0067	0.0057	0.013	0.058	0.06	0.7	5	
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7	
Zinc	1450	U	0.0070	0.029	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	2.5	2.2	< 10	22	800	15000	25000	
Fluoride	1220	U	0.22	0.26	< 1.0	2.6	10	150	500	
Sulphate	1220	U	< 1.0	1.8	< 10	16	1000	20000	50000	
Total Dissolved Solids	1020	N	39	30	78	310	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	15	17	< 50	170	500	800	1000	

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	2.2

Leachate Test Information	
Leachant volume 1st extract/l	0.346
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.184

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)





# Final Report

---

**Report No.:** 17-22316-1

**Initial Date of Issue:** 01-Sep-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2456 GI, Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 23-Aug-2017

**Order No.:** 2456 GI **Date Instructed:** 23-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 01-Sep-2017

**Date Approved:** 01-Sep-2017

**Approved By:**

**Details:** Robert Monk, Technical Development  
Chemist

---

## Results - 2 Stage WAC

**Project: 2456 GI, Lake Lothing, Lowestoft**

Chemtest Job No: 17-22316							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 502056							Limits			
Sample Ref: BHC02							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID:										
Top Depth(m): 3.00										
Bottom Depth(m):										
Sampling Date: 11-Aug-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				< 0.20	3	5	6
Loss On Ignition	2610	U	%				0.51	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					7.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.0090	--	To evaluate	To evaluate
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	2	25	
Barium	1450	U	0.016	0.0068	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	0.0014	0.0013	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	0.0018	0.0029	< 0.010	0.028	0.5	10	50	
Antimony	1450	U	0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5	
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7	
Zinc	1450	U	0.0035	0.0031	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	1.7	11	< 10	100	800	15000	25000	
Fluoride	1220	U	0.097	0.097	< 1.0	< 1.0	10	150	500	
Sulphate	1220	U	32	6.0	63	85	1000	20000	50000	
Total Dissolved Solids	1020	N	70	40	140	430	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	12	12	< 50	120	500	800	1000	

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	14

Leachate Test Information	
Leachant volume 1st extract/l	0.321
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.173

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-22419-1

**Initial Date of Issue:** 31-Aug-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 24-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 24-Aug-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 31-Aug-2017

**Date Approved:** 31-Aug-2017

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-22419	
Quotation No.: Q17-10179		Chemtest Sample ID.:		502623	
Order No.: 2543, GI		Client Sample Ref.:		TPC21	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		1.45	
		Date Sampled:		22-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
Moisture	N	2030	%	0.020	19
pH	U	2010		N/A	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.53
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	6.9
Sulphate (Total)	U	2430	%	0.010	< 0.010
Arsenic	U	2450	mg/kg	1.0	16
Cadmium	U	2450	mg/kg	0.10	0.63
Chromium	U	2450	mg/kg	1.0	28
Copper	U	2450	mg/kg	0.50	64
Mercury	U	2450	mg/kg	0.10	0.15
Nickel	U	2450	mg/kg	0.50	47
Lead	U	2450	mg/kg	0.50	88
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	150
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-22419	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		502623	
Order No.: 2543, GI		Client Sample Ref.:		TPC21	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		1.45	
		Date Sampled:		22-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-22419	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		502623	
Order No.: 2543, GI		Client Sample Ref.:		TPC21	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		1.45	
		Date Sampled:		22-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50



**Project: 2543, GI Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-22419	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		502623	
Order No.: 2543, GI		Client Sample Ref.:		TPC21	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		1.45	
		Date Sampled:		22-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50

**Project: 2543, GI Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-22419
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				502623
Order No.: 2543, GI	Client Sample Ref.:				TPC21
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				1.45
	Date Sampled:				22-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

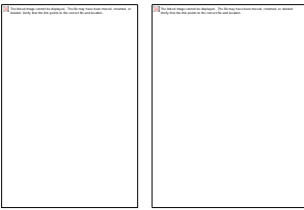
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 17-22420-1

**Initial Date of Issue:** 01-Sep-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 24-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 24-Aug-2017

**No. of Samples:** 3

**Turnaround (Wkdays):** 5 **Results Due:** 31-Aug-2017

**Date Approved:** 01-Sep-2017

**Approved By:**



**Details:** Keith Jones, Technical Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-22420
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				502630
Order No.: 2543, GI	Client Sample Ref.:				TPC23
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				1.00
	Date Sampled:				21-Aug-2017
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	9.1
Ammonia (Free) as N	U	1220	mg/l	0.010	0.057
Sulphate	U	1220	mg/l	1.0	24
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	7.0
Boron (Dissolved)	U	1450	µg/l	20	25
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.9
Copper (Dissolved)	U	1450	µg/l	1.0	7.4
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	2.3
Selenium (Dissolved)	U	1450	µg/l	1.0	1.6
Zinc (Dissolved)	U	1450	µg/l	1.0	3.1
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

**Project: 2543, GI Lake Lothing, Lowestoft**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-22420	
Quotation No.: Q17-10179		Chemtest Sample ID.:		502630	
Order No.: 2543, GI		Client Sample Ref.:		TPC23	
		Client Sample ID.:		J3	
		Sample Type:		SOIL	
		Top Depth (m):		1.00	
		Date Sampled:		21-Aug-2017	
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 17-22420				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 502630				
Order No.: 2543, GI	Client Sample Ref.: TPC23				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 1.00				
	Date Sampled: 21-Aug-2017				
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50



**Project: 2543, GI Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-22420			
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 502630			
Order No.: 2543, GI	Client Sample Ref.: TPC23			
	Client Sample ID.: J3			
	Sample Type: SOIL			
	Top Depth (m): 1.00			
	Date Sampled: 21-Aug-2017			
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>
Benzo[g,h,i]perylene	N	1790	µg/l	0.50
Total Phenols	U	1920	mg/l	0.030

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:			17-22420	17-22420	17-22420
Quotation No.: Q17-10179		Chemtest Sample ID.:			502625	502630	502632
Order No.: 2543, GI		Client Sample Ref.:			TPC22	TPC23	TPC23
		Client Sample ID.:			J2	J3	J5
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.60	1.00	2.60
		Date Sampled:			21-Aug-2017	21-Aug-2017	21-Aug-2017
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	2.8	15	8.4
pH	M	2010		N/A	7.0	8.3	8.0
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.81	0.68
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	0.050	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	3.4	6.1	3.5
Sulphate (Total)	M	2430	%	0.010	< 0.010	0.12	< 0.010
Arsenic	M	2450	mg/kg	1.0	2.2	20	6.5
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.43	< 0.10
Chromium	M	2450	mg/kg	1.0	4.5	21	9.2
Copper	M	2450	mg/kg	0.50	3.2	140	6.0
Mercury	M	2450	mg/kg	0.10	< 0.10	0.16	< 0.10
Nickel	M	2450	mg/kg	0.50	3.6	44	12
Lead	M	2450	mg/kg	0.50	10	270	8.4
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	55	310	31
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40			0.47
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	29	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	150	< 1.0

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-22420	17-22420	17-22420	
Quotation No.: Q17-10179		Chemtest Sample ID.:		502625	502630	502632	
Order No.: 2543, GI		Client Sample Ref.:		TPC22	TPC23	TPC23	
		Client Sample ID.:		J2	J3	J5	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		0.60	1.00	2.60	
		Date Sampled:		21-Aug-2017	21-Aug-2017	21-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	7.8	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	190	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	190	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.44	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	0.79	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.19	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	0.75	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.21	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.6	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	1.6	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	1.1	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	0.72	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.5	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	1.1	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	0.90	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.19	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	1.1	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	13	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-22420	17-22420	17-22420
Quotation No.: Q17-10179		Chemtest Sample ID.:		502625	502630	502632
Order No.: 2543, GI		Client Sample Ref.:		TPC22	TPC23	TPC23
		Client Sample ID.:		J2	J3	J5
		Sample Type:		SOIL	SOIL	SOIL
		Top Depth (m):		0.60	1.00	2.60
		Date Sampled:		21-Aug-2017	21-Aug-2017	21-Aug-2017
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-22420	17-22420	17-22420	
Quotation No.: Q17-10179		Chemtest Sample ID.:		502625	502630	502632	
Order No.: 2543, GI		Client Sample Ref.:		TPC22	TPC23	TPC23	
		Client Sample ID.:		J2	J3	J5	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		0.60	1.00	2.60	
		Date Sampled:		21-Aug-2017	21-Aug-2017	21-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-22420	17-22420	17-22420	
Quotation No.: Q17-10179		Chemtest Sample ID.:		502625	502630	502632	
Order No.: 2543, GI		Client Sample Ref.:		TPC22	TPC23	TPC23	
		Client Sample ID.:		J2	J3	J5	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		0.60	1.00	2.60	
		Date Sampled:		21-Aug-2017	21-Aug-2017	21-Aug-2017	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	0.60	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	1.0	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50	0.80	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	0.66	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50	0.75	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	1.2	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	0.63	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 81	N	2815	mg/kg	0.010		< 0.010	
PCB 52	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 77	N	2815	mg/kg	0.010		< 0.010	
PCB 105	N	2815	mg/kg	0.010		< 0.010	
PCB 90+101	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 114	N	2815	mg/kg	0.010		< 0.010	
PCB 118	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 118	N	2815	mg/kg	0.010		< 0.010	
PCB 153	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 123	N	2815	mg/kg	0.010		< 0.010	
PCB 138	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 126	N	2815	mg/kg	0.010		< 0.010	

## Results - Soil

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-22420	17-22420	17-22420
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				502625	502630	502632
Order No.: 2543, GI	<b>Client Sample Ref.:</b>				TPC22	TPC23	TPC23
	<b>Client Sample ID.:</b>				J2	J3	J5
	<b>Sample Type:</b>				SOIL	SOIL	SOIL
	<b>Top Depth (m):</b>				0.60	1.00	2.60
	<b>Date Sampled:</b>				21-Aug-2017	21-Aug-2017	21-Aug-2017
	<b>Asbestos Lab:</b>				COVENTRY	COVENTRY	COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>			
PCB 180	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 156	N	2815	mg/kg	0.010		< 0.010	
PCB 157	N	2815	mg/kg	0.010		< 0.010	
PCB 167	N	2815	mg/kg	0.010		< 0.010	
PCB 169	N	2815	mg/kg	0.010		< 0.010	
PCB 189	N	2815	mg/kg	0.010		< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10		< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.



SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-22844-1

**Initial Date of Issue:** 13-Sep-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 30-Aug-2017

**Order No.:** 2543, GI **Date Instructed:** 07-Sep-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 13-Sep-2017

**Date Approved:** 13-Sep-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 17-22844				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 504746				
Order No.: 2543, GI	Client Sample Ref.: BHC04				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 0.90				
	Date Sampled: 25-Aug-2017				
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	0.017
Sulphate	U	1220	mg/l	1.0	100
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.3
Boron (Dissolved)	U	1450	µg/l	20	68
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	5.1
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.0
Lead (Dissolved)	U	1450	µg/l	1.0	2.3
Selenium (Dissolved)	U	1450	µg/l	1.0	1.7
Zinc (Dissolved)	U	1450	µg/l	1.0	7.8
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	1.7
Acenaphthylene	U	1700	µg/l	0.10	1.0
Acenaphthene	U	1700	µg/l	0.10	1.2
Fluorene	U	1700	µg/l	0.10	2.1
Phenanthrene	U	1700	µg/l	0.10	2.3

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 17-22844				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 504746				
Order No.: 2543, GI	Client Sample Ref.: BHC04				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 0.90				
	Date Sampled: 25-Aug-2017				
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	0.15
Fluoranthene	U	1700	µg/l	0.10	2.2
Pyrene	U	1700	µg/l	0.10	2.1
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	13
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	2.1
Ethylbenzene	U	1760	µg/l	1.0	1.6
m & p-Xylene	U	1760	µg/l	1.0	9.4
o-Xylene	U	1760	µg/l	1.0	4.1
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 17-22844				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 504746				
Order No.: 2543, GI	Client Sample Ref.: BHC04				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 0.90				
	Date Sampled: 25-Aug-2017				
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

**Project: 2543, GI Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-22844				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 504746				
Order No.: 2543, GI	Client Sample Ref.: BHC04				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 0.90				
	Date Sampled: 25-Aug-2017				
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-22844
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				504746
Order No.: 2543, GI	Client Sample Ref.:				BHC04
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				0.90
	Date Sampled:				25-Aug-2017
	Asbestos Lab:				COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	2.1
pH	U	2010		N/A	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO <sub>4</sub>	U	2120	g/l	0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	2.3
Sulphate (Total)	U	2430	%	0.010	< 0.010
Arsenic	U	2450	mg/kg	1.0	3.3
Cadmium	U	2450	mg/kg	0.10	0.10
Chromium	U	2450	mg/kg	1.0	8.5
Copper	U	2450	mg/kg	0.50	7.3
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	7.0
Lead	U	2450	mg/kg	0.50	40
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	86
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	280
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	440
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	720
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	20000
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	510
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	22000
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	42
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	120
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	490
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	7100
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	2900



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-22844
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				504746
Order No.: 2543, GI	Client Sample Ref.:				BHC04
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				0.90
	Date Sampled:				25-Aug-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	11000
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	33000
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.12
Pyrene	U	2700	mg/kg	0.10	0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	9.4
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-22844	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		504746	
Order No.: 2543, GI		Client Sample Ref.:		BHC04	
		Client Sample ID.:		J3	
		Sample Type:		SOIL	
		Top Depth (m):		0.90	
		Date Sampled:		25-Aug-2017	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	16
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	7.6
m & p-Xylene	U	2760	µg/kg	1.0	27
o-Xylene	U	2760	µg/kg	1.0	15
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	8.9
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	12
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 17-22844				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 504746				
Order No.: 2543, GI	Client Sample Ref.: BHC04				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 0.90				
	Date Sampled: 25-Aug-2017				
	Asbestos Lab: COVENTRY				
Determinand	Accred.	SOP	Units	LOD	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 17-22844				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 504746				
Order No.: 2543, GI	Client Sample Ref.: BHC04				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 0.90				
	Date Sampled: 25-Aug-2017				
	Asbestos Lab: COVENTRY				
Determinand	Accred.	SOP	Units	LOD	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	8.0
Anthracene	U	2790	mg/kg	0.50	2.7
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	30
Pyrene	U	2790	mg/kg	0.50	28
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	22
Chrysene	U	2790	mg/kg	0.50	21
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	31
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	14
Benzo[a]pyrene	U	2790	mg/kg	0.50	21
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	11
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	3.8
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	12
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

<b>Sample ID:</b>	<b>Sample Ref:</b>	<b>Sample ID:</b>	<b>Sampled Date:</b>	<b>Deviation Code(s):</b>	<b>Containers Received:</b>
504746	BHC04	J3	25-Aug-2017	B	Amber Glass 250ml
504746	BHC04	J3	25-Aug-2017	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44 Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)





# Final Report

---

**Report No.:** 17-23648-1

**Initial Date of Issue:** 15-Sep-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 07-Sep-2017

**Order No.:** **Date Instructed:** 07-Sep-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 15-Sep-2017

**Date Approved:** 15-Sep-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

## Results - 2 Stage WAC

**Project: 2543, GI Lake Lothing, Lowestoft**

Chemtest Job No: 17-23648							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 508390							Limits			
Sample Ref:							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID: BHC04										
Top Depth(m): 0.90										
Bottom Depth(m):										
Sampling Date: 30-Aug-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				0.42	3	5	6
Loss On Ignition	2610	U	%				0.96	--	--	10
Total BTEX	2760	U	mg/kg				0.085	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				21000	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					7.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.0020	--	To evaluate	To evaluate
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.0044	0.0043	< 0.050	< 0.050	0.5	2	25	
Barium	1450	U	0.087	0.051	< 0.50	0.57	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	0.0011	0.0010	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	0.011	0.0057	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.032	0.0092	0.064	0.13	0.5	10	30	
Nickel	1450	U	0.0039	0.0014	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	0.0035	0.0035	< 0.010	0.035	0.5	10	50	
Antimony	1450	U	0.030	0.019	0.060	0.21	0.06	0.7	5	
Selenium	1450	U	0.0038	0.0030	< 0.010	0.031	0.1	0.5	7	
Zinc	1450	U	0.031	0.0070	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	10	1.1	20	26	800	15000	25000	
Fluoride	1220	U	0.87	0.64	1.7	6.8	10	150	500	
Sulphate	1220	U	550	76	1100	1600	1000	20000	50000	
Total Dissolved Solids	1020	N	720	130	1400	2300	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	30	20	60	220	500	800	1000	

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	2.6

Leachate Test Information	
Leachant volume 1st extract/l	0.345
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.295

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample

### **Sample Retention and Disposal**

---

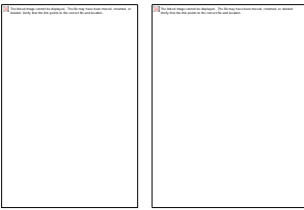
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-25501-1

**Initial Date of Issue:** 06-Oct-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 28-Sep-2017

**Order No.:** **Date Instructed:** 29-Sep-2017

**No. of Samples:** 5

**Turnaround (Wkdays):** 5 **Results Due:** 05-Oct-2017

**Date Approved:** 06-Oct-2017

**Approved By:**



**Details:** Robert Monk, Technical Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-25501	17-25501	
Quotation No.: Q17-10179		Chemtest Sample ID.:		517037	517043	
Order No.:		Client Sample Ref.:		TPC08	BH13CP	
		Client Sample ID.:		J6	J6	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		2.00	2.00	
		Date Sampled:		22-Sep-2017	21-Sep-2017	
Determinand	Accred.	SOP	Units	LOD		
pH	U	1010		N/A	7.5	8.0
Ammonia (Free) as N	U	1220	mg/l	0.010	< 0.010	< 0.010
Sulphate	U	1220	mg/l	1.0	4.9	3.7
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.3	1.4
Boron (Dissolved)	U	1450	µg/l	20	< 20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	0.52
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	1.1	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	1.9	< 1.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	18
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	76
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	94
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	8.0
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	110
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	110
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	210
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-25501	17-25501
Quotation No.: Q17-10179		Chemtest Sample ID.:		517037	517043
Order No.:		Client Sample Ref.:		TPC08	BH13CP
		Client Sample ID.:		J6	J6
		Sample Type:		SOIL	SOIL
		Top Depth (m):		2.00	2.00
		Date Sampled:		22-Sep-2017	21-Sep-2017
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-25501	17-25501
Quotation No.: Q17-10179		Chemtest Sample ID.:		517037	517043
Order No.:		Client Sample Ref.:		TPC08	BH13CP
		Client Sample ID.:		J6	J6
		Sample Type:		SOIL	SOIL
		Top Depth (m):		2.00	2.00
		Date Sampled:		22-Sep-2017	21-Sep-2017
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50



**Project: 2543, GI Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-25501	17-25501
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				517037	517043
Order No.:	Client Sample Ref.:				TPC08	BH13CP
	Client Sample ID.:				J6	J6
	Sample Type:				SOIL	SOIL
	Top Depth (m):				2.00	2.00
	Date Sampled:				22-Sep-2017	21-Sep-2017
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>		
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179	Chemtest Sample ID.:				517025	517031	517037	517043	517044
Order No.:	Client Sample Ref.:				TPC02	TPC07	TPC08	BH13CP	BH13CP
	Client Sample ID.:				J3	J4	J6	J6	J7
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	1.50	2.00	2.00	3.00
	Date Sampled:				22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.0	9.6	15	9.6	7.9
pH	M	2010		N/A	8.4	8.7	8.1	9.1	8.3
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.50	1.1	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	0.040	0.084	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	1.0	2.3	7.5	< 0.50	0.69
Sulphate (Total)	M	2430	%	0.010	0.021	0.012	0.26	0.23	< 0.010
Arsenic	M	2450	mg/kg	1.0	7.6	9.0	5.8	7.7	26
Cadmium	M	2450	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	10	9.9	6.0	8.2	18
Copper	M	2450	mg/kg	0.50	13	11	4.9	3.2	7.6
Mercury	M	2450	mg/kg	0.10	0.18	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	6.8	9.9	6.5	5.7	14
Lead	M	2450	mg/kg	0.50	74	22	15	5.6	9.8
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	240	74	53	15	110
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	1.7	1.1	0.88		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	5.1
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	6.9	71
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	73	270
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	71	240
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	100
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	150	680
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	22
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	150
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	8.8	< 1.0	< 1.0	< 1.0	57
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	17	< 1.0	< 1.0	< 1.0	< 1.0

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179	Chemtest Sample ID.:				517025	517031	517037	517043	517044
Order No.:	Client Sample Ref.:				TPC02	TPC07	TPC08	BH13CP	BH13CP
	Client Sample ID.:				J3	J4	J6	J6	J7
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	1.50	2.00	2.00	3.00
	Date Sampled:				22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	28	< 5.0	< 5.0	26	230
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	28	< 10	< 10	180	910
Naphthalene	M	2700	mg/kg	0.10	0.69	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	2.7	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	0.79	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	5.1	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	25	1.1	0.33	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	7.8	0.33	0.11	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	21	1.0	0.61	< 0.10	< 0.10
Pyrene	M	2700	mg/kg	0.10	19	1.1	0.88	< 0.10	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	12	0.90	0.18	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	12	0.66	0.23	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	11	0.67	0.49	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	4.3	0.15	0.11	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	7.8	0.33	0.40	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	5.7	0.54	0.38	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	1.4	0.34	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	4.2	0.33	0.18	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	140	7.5	3.9	< 2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:					17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179	Chemtest Sample ID.:					517025	517031	517037	517043	517044
Order No.:	Client Sample Ref.:					TPC02	TPC07	TPC08	BH13CP	BH13CP
	Client Sample ID.:					J3	J4	J6	J6	J7
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					1.00	1.50	2.00	2.00	3.00
	Date Sampled:					22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
	Asbestos Lab:					COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD						
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10	< 10	
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10	< 10	
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10	< 10	53	160	
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10	< 10	
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	11	< 1.0	
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50	< 50	
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	26	< 1.0	
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	120	
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	34	120	
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	16	32	
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50	< 50	< 50	< 50	
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179		Chemtest Sample ID.:		517025	517031	517037	517043	517044
Order No.:		Client Sample Ref.:		TPC02	TPC07	TPC08	BH13CP	BH13CP
		Client Sample ID.:		J3	J4	J6	J6	J7
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		1.00	1.50	2.00	2.00	3.00
		Date Sampled:		22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD				
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	1.5
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179		Chemtest Sample ID.:		517025	517031	517037	517043	517044
Order No.:		Client Sample Ref.:		TPC02	TPC07	TPC08	BH13CP	BH13CP
		Client Sample ID.:		J3	J4	J6	J6	J7
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		1.00	1.50	2.00	2.00	3.00
		Date Sampled:		22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD				
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	0.88
Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	0.63	< 0.50	< 0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 81	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	
PCB 77	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	
PCB 114	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	
PCB 118	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	
PCB 123	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	
PCB 126	N	2815	mg/kg	0.010		< 0.010		< 0.010

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179		Chemtest Sample ID.:		517025	517031	517037	517043	517044
Order No.:		Client Sample Ref.:		TPC02	TPC07	TPC08	BH13CP	BH13CP
		Client Sample ID.:		J3	J4	J6	J6	J7
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		1.00	1.50	2.00	2.00	3.00
		Date Sampled:		22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD				
PCB 180	M	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010
PCB 156	N	2815	mg/kg	0.010			< 0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010			< 0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010			< 0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010			< 0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010			< 0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12			< 0.12	< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

<b>Sample ID:</b>	<b>Sample Ref:</b>	<b>Sample ID:</b>	<b>Sampled Date:</b>	<b>Deviation Code(s):</b>	<b>Containers Received:</b>
517043	BH13CP	J6	21-Sep-2017	B	Amber Glass 250ml
517043	BH13CP	J6	21-Sep-2017	B	Plastic Tub 500g



SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

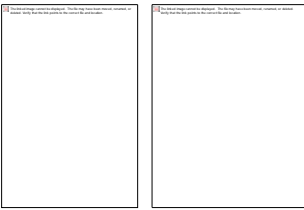
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 17-26029-1

**Initial Date of Issue:** 12-Oct-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 03-Oct-2017

**Order No.:** 2543, GI **Date Instructed:** 05-Oct-2017

**No. of Samples:** 3

**Turnaround (Wkdays):** 5 **Results Due:** 11-Oct-2017

**Date Approved:** 12-Oct-2017

**Approved By:**



**Details:** Robert Monk, Technical Manager

---

**Project: 2543, GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-26029	
Quotation No.: Q17-10179		Chemtest Sample ID.:		519841	
Order No.: 2543, GI		Client Sample Ref.:		BHC30	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		1.15	
		Date Sampled:		27-Sep-2017	
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	9.0
Ammonia (Free) as N	U	1220	mg/l	0.010	0.030
Sulphate	U	1220	mg/l	1.0	40
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.3
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	1.3
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	3.5
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

**Project: 2543, GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-26029	
Quotation No.: Q17-10179		Chemtest Sample ID.:		519841	
Order No.: 2543, GI		Client Sample Ref.:		BHC30	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		1.15	
		Date Sampled:		27-Sep-2017	
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

**Project: 2543, GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-26029	
Quotation No.: Q17-10179		Chemtest Sample ID.:		519841	
Order No.: 2543, GI		Client Sample Ref.:		BHC30	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		1.15	
		Date Sampled:		27-Sep-2017	
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		17-26029		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		519841		
Order No.: 2543, GI	Client Sample Ref.:		BHC30		
	Client Sample ID.:		J4		
	Sample Type:		SOIL		
	Top Depth (m):		1.15		
	Date Sampled:		27-Sep-2017		
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030



**Project: 2543, GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-26029	17-26029	17-26029
Quotation No.: Q17-10179		Chemtest Sample ID.:		519841	519843	519847
Order No.: 2543, GI		Client Sample Ref.:		BHC30	BHC31	BHC32
		Client Sample ID.:		J4	J2	J3
		Sample Type:		SOIL	SOIL	SOIL
		Top Depth (m):		1.15	0.40	0.75
		Date Sampled:		27-Sep-2017	27-Sep-2017	27-Sep-2017
		Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	14	13
pH	M	2010		N/A	8.9	8.4
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	1.5
Sulphate (2:1 Water Soluble) as SO <sub>4</sub>	M	2120	g/l	0.010	< 0.010	0.048
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	0.84	3.5
Sulphate (Total)	M	2430	%	0.010	< 0.010	0.29
Arsenic	M	2450	mg/kg	1.0	8.5	41
Cadmium	M	2450	mg/kg	0.10	0.14	0.84
Chromium	M	2450	mg/kg	1.0	11	33
Copper	M	2450	mg/kg	0.50	7.4	250
Mercury	M	2450	mg/kg	0.10	0.10	0.63
Nickel	M	2450	mg/kg	0.50	12	64
Lead	M	2450	mg/kg	0.50	14	1500
Selenium	M	2450	mg/kg	0.20	< 0.20	0.73
Zinc	M	2450	mg/kg	0.50	29	330
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40		0.78
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	1.9
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	3.3
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	14
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	56
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	120
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	33
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	220
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	7.5
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	8.6
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	64
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	330
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	1800

**Project: 2543, GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-26029	17-26029	17-26029	
Quotation No.: Q17-10179		Chemtest Sample ID.:		519841	519843	519847	
Order No.: 2543, GI		Client Sample Ref.:		BHC30	BHC31	BHC32	
		Client Sample ID.:		J4	J2	J3	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		1.15	0.40	0.75	
		Date Sampled:		27-Sep-2017	27-Sep-2017	27-Sep-2017	
		Asbestos Lab:		COVENTRY	COVENTRY		
Determinand	Accred.	SOP	Units	LOD			
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	170	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	2400	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	2600	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	3.0	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	1.0	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.93	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	8.3	0.14
Anthracene	M	2700	mg/kg	0.10	< 0.10	3.1	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	13	0.20
Pyrene	M	2700	mg/kg	0.10	< 0.10	17	0.30
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	8.1	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	12	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	4.0	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	12	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	7.9	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	2.4	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	14	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	120	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

**Project: 2543, GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-26029	17-26029	17-26029	
Quotation No.: Q17-10179		Chemtest Sample ID.:		519841	519843	519847	
Order No.: 2543, GI		Client Sample Ref.:		BHC30	BHC31	BHC32	
		Client Sample ID.:		J4	J2	J3	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		1.15	0.40	0.75	
		Date Sampled:		27-Sep-2017	27-Sep-2017	27-Sep-2017	
		Asbestos Lab:		COVENTRY	COVENTRY		
Determinand	Accred.	SOP	Units	LOD			
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

**Project: 2543, GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-26029	17-26029	17-26029	
Quotation No.: Q17-10179		Chemtest Sample ID.:		519841	519843	519847	
Order No.: 2543, GI		Client Sample Ref.:		BHC30	BHC31	BHC32	
		Client Sample ID.:		J4	J2	J3	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		1.15	0.40	0.75	
		Date Sampled:		27-Sep-2017	27-Sep-2017	27-Sep-2017	
		Asbestos Lab:		COVENTRY	COVENTRY		
Determinand	Accred.	SOP	Units	LOD			
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	0.65	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	0.59	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

**Project: 2543, GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-26029	17-26029	17-26029
Quotation No.: Q17-10179		Chemtest Sample ID.:		519841	519843	519847
Order No.: 2543, GI		Client Sample Ref.:		BHC30	BHC31	BHC32
		Client Sample ID.:		J4	J2	J3
		Sample Type:		SOIL	SOIL	SOIL
		Top Depth (m):		1.15	0.40	0.75
		Date Sampled:		27-Sep-2017	27-Sep-2017	27-Sep-2017
		Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD		
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	2.9
Anthracene	M	2790	mg/kg	0.50	< 0.50	1.3
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	5.5
Pyrene	M	2790	mg/kg	0.50	< 0.50	7.0
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	3.9
Chrysene	M	2790	mg/kg	0.50	< 0.50	3.9
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	6.4
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	2.3
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	4.8
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	3.5
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	1.2
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	4.9
PCB 28	M	2815	mg/kg	0.010		< 0.010
PCB 81	N	2815	mg/kg	0.010	< 0.010	
PCB 52	M	2815	mg/kg	0.010		< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010	
PCB 105	N	2815	mg/kg	0.010	< 0.010	
PCB 90+101	M	2815	mg/kg	0.010		< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010	
PCB 118	M	2815	mg/kg	0.010		< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010	
PCB 153	M	2815	mg/kg	0.010		< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010	
PCB 138	M	2815	mg/kg	0.010		< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010	

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-26029	17-26029	17-26029
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				519841	519843	519847
Order No.: 2543, GI	<b>Client Sample Ref.:</b>				BHC30	BHC31	BHC32
	<b>Client Sample ID.:</b>				J4	J2	J3
	<b>Sample Type:</b>				SOIL	SOIL	SOIL
	<b>Top Depth (m):</b>				1.15	0.40	0.75
	<b>Date Sampled:</b>				27-Sep-2017	27-Sep-2017	27-Sep-2017
	<b>Asbestos Lab:</b>				COVENTRY	COVENTRY	
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>			
PCB 180	M	2815	mg/kg	0.010		< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010		
PCB 157	N	2815	mg/kg	0.010	< 0.010		
PCB 167	N	2815	mg/kg	0.010	< 0.010		
PCB 169	N	2815	mg/kg	0.010	< 0.010		
PCB 189	N	2815	mg/kg	0.010	< 0.010		
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12		
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10	
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

<b>Sample ID:</b>	<b>Sample Ref:</b>	<b>Sample ID:</b>	<b>Sampled Date:</b>	<b>Deviation Code(s):</b>	<b>Containers Received:</b>
519841	BHC30	J4	27-Sep-2017	B	Amber Glass 250ml
519841	BHC30	J4	27-Sep-2017	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.



SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-26235-1

**Initial Date of Issue:** 16-Oct-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 06-Oct-2017

**Order No.:** 2543, GI **Date Instructed:** 06-Oct-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 16-Oct-2017

**Date Approved:** 16-Oct-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

## Results - 2 Stage WAC

**Project: 2543, GI Lake Lothing, Lowestoft**

Chemtest Job No: 17-26235							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 520920							Limits			
Sample Ref: BHC13							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID:										
Top Depth(m): 2.00										
Bottom Depth(m):										
Sampling Date: 03-Oct-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				< 0.20	3	5	6
Loss On Ignition	2610	U	%				1.1	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				87	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					9.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.0050	--	To evaluate	To evaluate
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.0076	0.0093	< 0.050	0.091	0.5	2	25	
Barium	1450	U	0.021	0.0095	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	0.0016	0.0016	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	0.0022	0.0024	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.013	0.0029	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	0.0013	< 0.0010	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	< 0.0010	0.0020	< 0.010	0.017	0.5	10	50	
Antimony	1450	U	0.0028	0.0012	< 0.010	0.014	0.06	0.7	5	
Selenium	1450	U	0.0011	< 0.0010	< 0.010	< 0.010	0.1	0.5	7	
Zinc	1450	U	0.0044	0.0013	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	9.3	3.2	19	41	800	15000	25000	
Fluoride	1220	U	0.37	0.17	< 1.0	2.0	10	150	500	
Sulphate	1220	U	130	21	260	360	1000	20000	50000	
Total Dissolved Solids	1020	N	260	69	520	960	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	17	14	< 50	140	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	4.6

Leachate Test Information	
Leachant volume 1st extract/l	0.341
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.251

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-26355-1

**Initial Date of Issue:** 18-Oct-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 06-Oct-2017

**Order No.:** Q17-10179 **Date Instructed:** 10-Oct-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 16-Oct-2017

**Date Approved:** 18-Oct-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

**Project: Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-26355
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				521396
Order No.: Q17-10179	Client Sample Ref.:				BHC05
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				0.6
	Date Sampled:				03-Oct-2017
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	9.5
Ammonia (Free) as N	U	1220	mg/l	0.010	0.63
Sulphate	U	1220	mg/l	1.0	24
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	25
Boron (Dissolved)	U	1450	µg/l	20	39
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	2.4
Copper (Dissolved)	U	1450	µg/l	1.0	19
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	2.3
Lead (Dissolved)	U	1450	µg/l	1.0	2.9
Selenium (Dissolved)	U	1450	µg/l	1.0	3.7
Zinc (Dissolved)	U	1450	µg/l	1.0	2.2
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	5.8
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	29
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	97
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	6.9
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	140
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	140
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10



**Project: Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-26355				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 521396				
Order No.: Q17-10179	Client Sample Ref.: BHC05				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 0.6				
	Date Sampled: 03-Oct-2017				
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

**Project: Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-26355				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 521396				
Order No.: Q17-10179	Client Sample Ref.: BHC05				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 0.6				
	Date Sampled: 03-Oct-2017				
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

**Project: Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		17-26355		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		521396		
Order No.: Q17-10179	Client Sample Ref.:		BHC05		
	Client Sample ID.:		J3		
	Sample Type:		SOIL		
	Top Depth (m):		0.6		
	Date Sampled:		03-Oct-2017		
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

**Project: Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		17-26355		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		521396		
Order No.: Q17-10179	Client Sample Ref.:		BHC05		
	Client Sample ID.:		J3		
	Sample Type:		SOIL		
	Top Depth (m):		0.6		
	Date Sampled:		03-Oct-2017		
	Asbestos Lab:		COVENTRY		
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	7.6
pH	U	2010		N/A	9.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.62
Sulphate (2:1 Water Soluble) as SO <sub>4</sub>	U	2120	g/l	0.010	0.10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	3.4
Ammonium (Extractable)	U	2425	mg/kg	0.50	27
Sulphate (Total)	U	2430	%	0.010	0.063
Arsenic	U	2450	mg/kg	1.0	9.1
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	7.8
Copper	U	2450	mg/kg	0.50	48
Mercury	U	2450	mg/kg	0.10	0.21
Nickel	U	2450	mg/kg	0.50	12
Lead	U	2450	mg/kg	0.50	110
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	52
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	2.3
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	100
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	100
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	1.1
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	51
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0

**Project: Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-26355
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				521396
Order No.: Q17-10179	Client Sample Ref.:				BHC05
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				0.6
	Date Sampled:				03-Oct-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	52
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	160
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	1.1
Anthracene	U	2700	mg/kg	0.10	0.26
Fluoranthene	U	2700	mg/kg	0.10	1.4
Pyrene	U	2700	mg/kg	0.10	1.5
Benzo[a]anthracene	U	2700	mg/kg	0.10	1.3
Chrysene	U	2700	mg/kg	0.10	0.66
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	0.79
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	0.29
Benzo[a]pyrene	U	2700	mg/kg	0.10	0.37
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	0.25
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	0.29
Total Of 16 PAH's	U	2700	mg/kg	2.0	8.2
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

**Project: Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-26355
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				521396
Order No.: Q17-10179	Client Sample Ref.:				BHC05
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				0.6
	Date Sampled:				03-Oct-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

**Project: Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-26355
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				521396
Order No.: Q17-10179	Client Sample Ref.:				BHC05
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				0.6
	Date Sampled:				03-Oct-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50

**Project: Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		17-26355		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		521396		
Order No.: Q17-10179	Client Sample Ref.:		BHC05		
	Client Sample ID.:		J3		
	Sample Type:		SOIL		
	Top Depth (m):		0.6		
	Date Sampled:		03-Oct-2017		
	Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	0.64
Pyrene	U	2790	mg/kg	0.50	0.52
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30



SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44 Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-26646-1

**Initial Date of Issue:** 18-Oct-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543 GI, Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 10-Oct-2017

**Order No.:** **Date Instructed:** 10-Oct-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 18-Oct-2017

**Date Approved:** 18-Oct-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

## Results - 2 Stage WAC

**Project: 2543 GI, Lake Lothing, Lowestoft**

Chemtest Job No: 17-26646							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 522627							Limits			
Sample Ref: BHC05							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID:										
Top Depth(m): 0.60										
Bottom Depth(m):										
Sampling Date: 03-Oct-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				1.9	3	5	6
Loss On Ignition	2610	U	%				2.4	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				13	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				19	100	--	--
pH	2010	U					9.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.011	--	To evaluate	To evaluate
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.025	0.012	< 0.050	0.14	0.5	2	25	
Barium	1450	U	0.030	0.030	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	0.0076	0.0056	< 0.050	0.059	0.5	10	70	
Copper	1450	U	0.10	0.012	0.20	0.13	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.023	0.034	< 0.050	0.33	0.5	10	30	
Nickel	1450	U	0.013	0.0026	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.5	10	50	
Antimony	1450	U	0.014	0.0038	0.028	0.052	0.06	0.7	5	
Selenium	1450	U	0.014	0.0063	0.028	0.073	0.1	0.5	7	
Zinc	1450	U	0.010	0.0071	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	23	270	46	2400	800	15000	25000	
Fluoride	1220	U	0.30	0.33	< 1.0	3.3	10	150	500	
Sulphate	1220	U	130	140	260	1400	1000	20000	50000	
Total Dissolved Solids	1020	N	280	750	560	6900	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	36	20	72	220	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	7.1

Leachate Test Information	
Leachant volume 1st extract/l	0.337
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.234

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-29274-1

**Initial Date of Issue:** 17-Nov-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 03-Nov-2017

**Order No.:** 2543, GI **Date Instructed:** 13-Nov-2017

**No. of Samples:** 2

**Turnaround (Wkdays):** 5 **Results Due:** 17-Nov-2017

**Date Approved:** 17-Nov-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---



Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-29274	17-29274
Quotation No.: Q17-10179		Chemtest Sample ID.:		534724	534740
Order No.: 2543, GI		Client Sample Ref.:		WSC17	WSC19
		Client Sample ID.:		J5	J1
		Sample Type:		SOIL	SOIL
		Top Depth (m):		1.60	0.30
		Date Sampled:		30-Oct-2017	01-Nov-2017
		Asbestos Lab:			COVENTRY
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	8.8 9.7
pH	U	2010		N/A	7.2 8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40 0.46
Sulphate (2:1 Water Soluble) as SO <sub>4</sub>	U	2120	g/l	0.010	< 0.010 < 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50 < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50 < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	1.0 4.1
Sulphate (Total)	U	2430	%	0.010	< 0.010 0.048
Arsenic	U	2450	mg/kg	1.0	12 9.9
Cadmium	U	2450	mg/kg	0.10	< 0.10 0.21
Chromium	U	2450	mg/kg	1.0	15 12
Copper	U	2450	mg/kg	0.50	10 47
Mercury	U	2450	mg/kg	0.10	< 0.10 0.13
Nickel	U	2450	mg/kg	0.50	16 24
Lead	U	2450	mg/kg	0.50	12 160
Selenium	U	2450	mg/kg	0.20	< 0.20 < 0.20
Zinc	U	2450	mg/kg	0.50	40 170
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50 < 0.50
Organic Matter	U	2625	%	0.40	0.43
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0 21
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0 < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0 21
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0 84

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-29274	17-29274
Quotation No.: Q17-10179		Chemtest Sample ID.:		534724	534740
Order No.: 2543, GI		Client Sample Ref.:		WSC17	WSC19
		Client Sample ID.:		J5	J1
		Sample Type:		SOIL	SOIL
		Top Depth (m):		1.60	0.30
		Date Sampled:		30-Oct-2017	01-Nov-2017
		Asbestos Lab:			COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-29274	17-29274
Quotation No.: Q17-10179		Chemtest Sample ID.:		534724	534740
Order No.: 2543, GI		Client Sample Ref.:		WSC17	WSC19
		Client Sample ID.:		J5	J1
		Sample Type:		SOIL	SOIL
		Top Depth (m):		1.60	0.30
		Date Sampled:		30-Oct-2017	01-Nov-2017
		Asbestos Lab:			COVENTRY
Determinand	Accred.	SOP	Units	LOD	
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-29274	17-29274
Quotation No.: Q17-10179		Chemtest Sample ID.:		534724	534740
Order No.: 2543, GI		Client Sample Ref.:		WSC17	WSC19
		Client Sample ID.:		J5	J1
		Sample Type:		SOIL	SOIL
		Top Depth (m):		1.60	0.30
		Date Sampled:		30-Oct-2017	01-Nov-2017
		Asbestos Lab:			COVENTRY
Determinand	Accred.	SOP	Units	LOD	
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-29274	17-29274
Quotation No.: Q17-10179		Chemtest Sample ID.:		534724	534740
Order No.: 2543, GI		Client Sample Ref.:		WSC17	WSC19
		Client Sample ID.:		J5	J1
		Sample Type:		SOIL	SOIL
		Top Depth (m):		1.60	0.30
		Date Sampled:		30-Oct-2017	01-Nov-2017
		Asbestos Lab:			COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	0.51
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	1.8
Pyrene	U	2790	mg/kg	0.50	1.5
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	0.74
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	1.4
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	0.52
Benzo[a]pyrene	U	2790	mg/kg	0.50	0.90
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	0.66
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	0.86
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12

**Project: 2543, GI Lake Lothing, Lowestoft**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		17-29274	17-29274	
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		534724	534740	
Order No.: 2543, GI	Client Sample Ref.:		WSC17	WSC19	
	Client Sample ID.:		J5	J1	
	Sample Type:		SOIL	SOIL	
	Top Depth (m):		1.60	0.30	
	Date Sampled:		30-Oct-2017	01-Nov-2017	
	Asbestos Lab:			COVENTRY	
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Total Phenols	U	2920	mg/kg	0.30	< 0.30 < 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

<b>SOP</b>	<b>Title</b>	<b>Parameters included</b>	<b>Method summary</b>
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.



## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-29383-1

**Initial Date of Issue:** 21-Nov-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543, GI Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 06-Nov-2017

**Order No.:** 2543, GI **Date Instructed:** 13-Nov-2017

**No. of Samples:** 4

**Turnaround (Wkdays):** 5 **Results Due:** 17-Nov-2017

**Date Approved:** 21-Nov-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-29383
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				535385
Order No.: 2543, GI	Client Sample Ref.:				WSC19A
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				1.50
	Date Sampled:				02-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	< 0.010
Sulphate	U	1220	mg/l	1.0	3.2
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.1
Boron (Dissolved)	U	1450	µg/l	20	23
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.3
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	6.3
Lead (Dissolved)	U	1450	µg/l	1.0	1.1
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	5.1
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-29383
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				535385
Order No.: 2543, GI	Client Sample Ref.:				WSC19A
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				1.50
	Date Sampled:				02-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-29383
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				535385
Order No.: 2543, GI	Client Sample Ref.:				WSC19A
	Client Sample ID.:				J3
	Sample Type:				SOIL
	Top Depth (m):				1.50
	Date Sampled:				02-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

**Project: 2543, GI Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-29383				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 535385				
Order No.: 2543, GI	Client Sample Ref.: WSC19A				
	Client Sample ID.: J3				
	Sample Type: SOIL				
	Top Depth (m): 1.50				
	Date Sampled: 02-Nov-2017				
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

**Results - Soil**

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179	Chemtest Sample ID.:				535381	535385	535386	535390
Order No.: 2543, GI	Client Sample Ref.:				WSC14	WSC19A	WSC19A	WSC22
	Client Sample ID.:				J3	J3	J4	J2
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.70	1.50	2.10	0.50
	Date Sampled:				02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
	Asbestos Lab:				COVENTRY	COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A	-	-		-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected
Moisture	N	2030	%	0.020	7.7	3.7	5.9	5.0
pH	U	2010		N/A	8.6	8.3	8.0	9.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	1.2
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	0.34
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	< 0.50	0.68	0.67	< 0.50
Sulphate (Total)	U	2430	%	0.010	0.051	< 0.010	< 0.010	0.096
Arsenic	U	2450	mg/kg	1.0	12	29	1.6	8.0
Cadmium	U	2450	mg/kg	0.10	0.23	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	16	27	8.2	8.6
Copper	U	2450	mg/kg	0.50	20	30	2.2	5.1
Mercury	U	2450	mg/kg	0.10	< 0.10	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	17	37	6.2	7.2
Lead	U	2450	mg/kg	0.50	150	110	8.4	18
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	59	130	12	21
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40			< 0.40	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	3.4	< 1.0	< 1.0	16
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	13	< 1.0	< 1.0	1.4

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179	Chemtest Sample ID.:				535381	535385	535386	535390
Order No.: 2543, GI	Client Sample Ref.:				WSC14	WSC19A	WSC19A	WSC22
	Client Sample ID.:				J3	J3	J4	J2
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.70	1.50	2.10	0.50
	Date Sampled:				02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
	Asbestos Lab:				COVENTRY	COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD				
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	16	< 5.0	< 5.0	18
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	16	< 10	< 10	18
Naphthalene	U	2700	mg/kg	0.10	0.19	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	0.16	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	0.52	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	0.20	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	1.1	0.21	< 0.10	0.36
Pyrene	U	2700	mg/kg	0.10	0.93	0.23	< 0.10	0.30
Benzo[a]anthracene	U	2700	mg/kg	0.10	0.49	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	0.18	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	0.39	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	0.27	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	4.4	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0



Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179		Chemtest Sample ID.:		535381	535385	535386	535390
Order No.: 2543, GI		Client Sample Ref.:		WSC14	WSC19A	WSC19A	WSC22
		Client Sample ID.:		J3	J3	J4	J2
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		1.70	1.50	2.10	0.50
		Date Sampled:		02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
		Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD			
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179		Chemtest Sample ID.:		535381	535385	535386	535390
Order No.: 2543, GI		Client Sample Ref.:		WSC14	WSC19A	WSC19A	WSC22
		Client Sample ID.:		J3	J3	J4	J2
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		1.70	1.50	2.10	0.50
		Date Sampled:		02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
		Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD			
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

**Project: 2543, GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179		Chemtest Sample ID.:		535381	535385	535386	535390
Order No.: 2543, GI		Client Sample Ref.:		WSC14	WSC19A	WSC19A	WSC22
		Client Sample ID.:		J3	J3	J4	J2
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		1.70	1.50	2.10	0.50
		Date Sampled:		02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
		Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	1.7	< 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	0.54	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	3.0	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	2.4	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	1.2	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	1.0	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	1.2	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	0.75	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010		< 0.010	
PCB 81	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 52	U	2815	mg/kg	0.010		< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 90+101	U	2815	mg/kg	0.010		< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 118	U	2815	mg/kg	0.010		< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 153	U	2815	mg/kg	0.010		< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 138	U	2815	mg/kg	0.010		< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010		< 0.010

**Project: 2543, GI Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179		Chemtest Sample ID.:		535381	535385	535386	535390
Order No.: 2543, GI		Client Sample Ref.:		WSC14	WSC19A	WSC19A	WSC22
		Client Sample ID.:		J3	J3	J4	J2
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		1.70	1.50	2.10	0.50
		Date Sampled:		02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
		Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD			
PCB 180	U	2815	mg/kg	0.010		< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

<b>Sample ID:</b>	<b>Sample Ref:</b>	<b>Sample ID:</b>	<b>Sampled Date:</b>	<b>Deviation Code(s):</b>	<b>Containers Received:</b>
535385	WSC19A	J3	02-Nov-2017	B	Amber Glass 250ml
535385	WSC19A	J3	02-Nov-2017	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)





# Final Report

---

**Report No.:** 17-29990-1

**Initial Date of Issue:** 22-Nov-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543,GI Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 13-Nov-2017

**Order No.:** 2543,GI **Date Instructed:** 13-Nov-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 21-Nov-2017

**Date Approved:** 22-Nov-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

## Results - 2 Stage WAC

**Project: 2543.GI Lake Lothing**

Chemtest Job No: 17-29990							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 538111							Limits			
Sample Ref:							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID: WSC14										
Top Depth(m): 1.70										
Bottom Depth(m):										
Sampling Date: 02-Nov-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				0.23	3	5	6
Loss On Ignition	2610	U	%				0.92	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				100	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				110	100	--	--
pH	2010	U					9.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.016	--	To evaluate	To evaluate
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1450	U	0.0013	0.0033	< 0.050	< 0.050	0.5	2	25	
Barium	1450	U	0.0068	0.0050	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	0.0013	0.0019	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.0030	0.0021	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	0.0019	0.0011	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	0.0010	0.0042	< 0.010	0.037	0.5	10	50	
Antimony	1450	U	0.0042	0.0066	< 0.010	0.063	0.06	0.7	5	
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7	
Zinc	1450	U	< 0.0010	0.0067	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	2.0	< 1.0	< 10	< 10	800	15000	25000	
Fluoride	1220	U	0.76	0.67	1.5	6.8	10	150	500	
Sulphate	1220	U	17	7.7	34	90	1000	20000	50000	
Total Dissolved Solids	1020	N	69	54	140	560	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	17	46	< 50	420	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	4.4

Leachate Test Information	
Leachant volume 1st extract/l	0.342
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.246

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

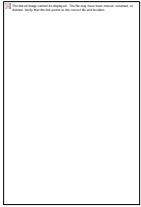
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-30076-1

**Initial Date of Issue:** 17-Nov-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543 G-I - Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 13-Nov-2017

**Order No.:** 2543, G-I **Date Instructed:** 13-Nov-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5 **Results Due:** 17-Nov-2017

**Date Approved:** 17-Nov-2017

**Approved By:**



**Details:** Robert Monk, Technical Manager

---

**Project: 2543 G-I - Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-30076
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				538508
Order No.: 2543, G-I	Client Sample Ref.:				WSC23
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.50
	Date Sampled:				09-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	9.7
Ammonia (Free) as N	U	1220	mg/l	0.010	0.053
Sulphate	U	1220	mg/l	1.0	16
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	10
Boron (Dissolved)	U	1450	µg/l	20	37
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.8
Copper (Dissolved)	U	1450	µg/l	1.0	2.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	2.1
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	1.1
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	84
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	74
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	60
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	220
Total Petroleum Hydrocarbons	N	1675	µg/l	10	220
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	8.4

**Project: 2543 G-I - Lake Lothing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-30076	
Quotation No.: Q17-10179		Chemtest Sample ID.:		538508	
Order No.: 2543, G-I		Client Sample Ref.:		WSC23	
		Client Sample ID.:		J1	
		Sample Type:		SOIL	
		Top Depth (m):		0.50	
		Date Sampled:		09-Nov-2017	
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	2.8
Fluoranthene	U	1700	µg/l	0.10	7.6
Pyrene	U	1700	µg/l	0.10	6.7
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	26
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

**Project: 2543 G-I - Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-30076
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				538508
Order No.: 2543, G-I	Client Sample Ref.:				WSC23
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.50
	Date Sampled:				09-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	0.92
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	5.6
Anthracene	N	1790	µg/l	0.50	1.9
Carbazole	N	1790	µg/l	0.50	1.8
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	9.5
Pyrene	N	1790	µg/l	0.50	7.5
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	1.3
Chrysene	N	1790	µg/l	0.50	0.94
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50



**Project: 2543 G-I - Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 17-30076			
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 538508			
Order No.: 2543, G-I	Client Sample Ref.: WSC23			
	Client Sample ID.: J1			
	Sample Type: SOIL			
	Top Depth (m): 0.50			
	Date Sampled: 09-Nov-2017			
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>
Benzo[g,h,i]perylene	N	1790	µg/l	0.50
Total Phenols	U	1920	mg/l	0.030
				< 0.50
				< 0.030

**Project: 2543 G-I - Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-30076
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				538508
Order No.: 2543, G-I	Client Sample Ref.:				WSC23
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.50
	Date Sampled:				09-Nov-2017
	Asbestos Lab:				COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	7.8
pH	U	2010		N/A	8.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.58
Sulphate (2:1 Water Soluble) as SO <sub>4</sub>	U	2120	g/l	0.010	0.032
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	0.51
Sulphate (Total)	U	2430	%	0.010	0.21
Arsenic	U	2450	mg/kg	1.0	12
Cadmium	U	2450	mg/kg	0.10	0.17
Chromium	U	2450	mg/kg	1.0	24
Copper	U	2450	mg/kg	0.50	36
Mercury	U	2450	mg/kg	0.10	0.19
Nickel	U	2450	mg/kg	0.50	27
Lead	U	2450	mg/kg	0.50	120
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	71
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	22
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	38
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	39
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	100
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	12
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	74
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	360
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	2700
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	490

**Project: 2543 G-I - Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-30076
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				538508
Order No.: 2543, G-I	Client Sample Ref.:				WSC23
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.50
	Date Sampled:				09-Nov-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	3700
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	3800
Naphthalene	U	2700	mg/kg	0.10	0.73
Acenaphthylene	U	2700	mg/kg	0.10	2.4
Acenaphthene	U	2700	mg/kg	0.10	1.1
Fluorene	U	2700	mg/kg	0.10	1.3
Phenanthrene	U	2700	mg/kg	0.10	11
Anthracene	U	2700	mg/kg	0.10	4.9
Fluoranthene	U	2700	mg/kg	0.10	42
Pyrene	U	2700	mg/kg	0.10	45
Benzo[a]anthracene	U	2700	mg/kg	0.10	20
Chrysene	U	2700	mg/kg	0.10	22
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	32
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	12
Benzo[a]pyrene	U	2700	mg/kg	0.10	26
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	18
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	5.1
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	16
Total Of 16 PAH's	U	2700	mg/kg	2.0	260
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

**Project: 2543 G-I - Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-30076
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				538508
Order No.: 2543, G-I	Client Sample Ref.:				WSC23
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.50
	Date Sampled:				09-Nov-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

**Project: 2543 G-I - Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-30076
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				538508
Order No.: 2543, G-I	Client Sample Ref.:				WSC23
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.50
	Date Sampled:				09-Nov-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	0.88
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	0.75
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	0.94

**Project: 2543 G-I - Lake Lothing**

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-30076	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		538508	
Order No.: 2543, G-I		Client Sample Ref.:		WSC23	
		Client Sample ID.:		J1	
		Sample Type:		SOIL	
		Top Depth (m):		0.50	
		Date Sampled:		09-Nov-2017	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	8.3
Anthracene	U	2790	mg/kg	0.50	4.0
Carbazole	U	2790	mg/kg	0.50	1.3
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	25
Pyrene	U	2790	mg/kg	0.50	24
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	12
Chrysene	U	2790	mg/kg	0.50	12
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	19
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	7.6
Benzo[a]pyrene	U	2790	mg/kg	0.50	16
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	12
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44 Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.



## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

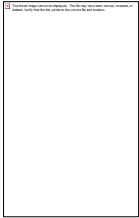
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-31448-1

**Initial Date of Issue:** 04-Dec-2017

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543 GI Lake Lothing, L14

**Quotation No.:** Q17-10179      **Date Received:** 24-Nov-2017

**Order No.:** 2543 GI      **Date Instructed:** 24-Nov-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5      **Results Due:** 30-Nov-2017

**Date Approved:** 04-Dec-2017

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-31448
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				545141
Order No.: 2543 GI	Client Sample Ref.:				BHC103
	Client Sample ID.:				8
	Sample Type:				SOIL
	Top Depth (m):				4.5
	Date Sampled:				22-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:			17-31448
Quotation No.: Q17-10179		Chemtest Sample ID.:			545141
Order No.: 2543 GI		Client Sample Ref.:			BHC103
		Client Sample ID.:			8
		Sample Type:			SOIL
		Top Depth (m):			4.5
		Date Sampled:			22-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 17-31448				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 545141				
Order No.: 2543 GI	Client Sample Ref.: BHC103				
	Client Sample ID.: 8				
	Sample Type: SOIL				
	Top Depth (m): 4.5				
	Date Sampled: 22-Nov-2017				
Determinand	Accred.	SOP	Units	LOD	
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:				17-31448
Quotation No.: Q17-10179		Chemtest Sample ID.:				545141
Order No.: 2543 GI		Client Sample Ref.:				BHC103
		Client Sample ID.:				8
		Sample Type:				SOIL
		Top Depth (m):				4.5
		Date Sampled:				22-Nov-2017
Determinand	Accred.	SOP	Units	LOD		
Moisture	N	2030	%	0.020	7.9	
pH	U	2010		N/A	8.7	
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	
Ammonium (Extractable)	U	2425	mg/kg	0.50	2.0	
Sulphate (Total)	U	2430	%	0.010	< 0.010	
Arsenic	U	2450	mg/kg	1.0	8.5	
Cadmium	U	2450	mg/kg	0.10	< 0.10	
Chromium	U	2450	mg/kg	1.0	6.4	
Copper	U	2450	mg/kg	0.50	5.0	
Mercury	U	2450	mg/kg	0.10	< 0.10	
Nickel	U	2450	mg/kg	0.50	5.2	
Lead	U	2450	mg/kg	0.50	3.5	
Selenium	U	2450	mg/kg	0.20	< 0.20	
Zinc	U	2450	mg/kg	0.50	18	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	
Naphthalene	U	2700	mg/kg	0.10	< 0.10	
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	
Fluorene	U	2700	mg/kg	0.10	< 0.10	
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-31448	
Quotation No.: Q17-10179		Chemtest Sample ID.:		545141	
Order No.: 2543 GI		Client Sample Ref.:		BHC103	
		Client Sample ID.:		8	
		Sample Type:		SOIL	
		Top Depth (m):		4.5	
		Date Sampled:		22-Nov-2017	
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-31448	
Quotation No.: Q17-10179		Chemtest Sample ID.:		545141	
Order No.: 2543 GI		Client Sample Ref.:		BHC103	
		Client Sample ID.:		8	
		Sample Type:		SOIL	
		Top Depth (m):		4.5	
		Date Sampled:		22-Nov-2017	
Determinand	Accred.	SOP	Units	LOD	
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	1.0 µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50



<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>			17-31448
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>			545141
Order No.: 2543 GI		Client Sample Ref.:			BHC103
		Client Sample ID.:			8
		Sample Type:			SOIL
		Top Depth (m):			4.5
		Date Sampled:			22-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-31448
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				545141
Order No.: 2543 GI	Client Sample Ref.:				BHC103
	Client Sample ID.:				8
	Sample Type:				SOIL
	Top Depth (m):				4.5
	Date Sampled:				22-Nov-2017
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

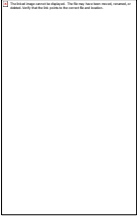
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-31794-1

**Initial Date of Issue:** 06-Dec-2017

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 254391 L14 Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 29-Nov-2017

**Order No.:** 254391      **Date Instructed:** 29-Nov-2017

**No. of Samples:** 4

**Turnaround (Wkdays):** 5      **Results Due:** 05-Dec-2017

**Date Approved:** 06-Dec-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-31794
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				546616
Order No.: 254391	Client Sample Ref.:				BH102
	Client Sample ID.:				V1
	Sample Type:				SOIL
	Top Depth (m):				0.30
	Date Sampled:				24-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	10.4
Ammonia (Free) as N	U	1220	mg/l	0.010	0.057
Sulphate	U	1220	mg/l	1.0	17
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	6.7
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	32
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	14
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-31794
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				546616
Order No.: 254391	Client Sample Ref.:				BH102
	Client Sample ID.:				V1
	Sample Type:				SOIL
	Top Depth (m):				0.30
	Date Sampled:				24-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-31794
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				546616
Order No.: 254391	Client Sample Ref.:				BH102
	Client Sample ID.:				V1
	Sample Type:				SOIL
	Top Depth (m):				0.30
	Date Sampled:				24-Nov-2017
Determinand	Accred.	SOP	Units	LOD	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179	Chemtest Sample ID.:				546616	546618	546620	546621
Order No.: 254391	Client Sample Ref.:				BH102	BH102	BHC27	BHC27
	Client Sample ID.:				V1	V3	V2	V3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.50	0.60	1.60
	Date Sampled:				24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A	Fibres/Clumps		-	
Asbestos Identification	U	2192	%	0.001	Chrysotile		No Asbestos Detected	
Moisture	N	2030	%	0.020	11	6.0	15	24
pH	U	2010		N/A	11.2	8.6	9.5	7.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	1.1	0.81	1.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.23	0.055	0.15	0.043
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	0.90	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	< 0.50	1.8	0.94	3.3
Sulphate (Total)	U	2430	%	0.010	0.26	0.029	0.22	0.098
Arsenic	U	2450	mg/kg	1.0	32	10	25	25
Cadmium	U	2450	mg/kg	0.10	0.88	< 0.10	0.85	0.16
Chromium	U	2450	mg/kg	1.0	18	12	21	24
Copper	U	2450	mg/kg	0.50	77	6.0	57	14
Mercury	U	2450	mg/kg	0.10	0.34	0.14	0.40	0.16
Nickel	U	2450	mg/kg	0.50	32	11	22	24
Lead	U	2450	mg/kg	0.50	330	47	250	44
Selenium	U	2450	mg/kg	0.20	0.54	< 0.20	< 0.20	0.31
Zinc	U	2450	mg/kg	0.50	670	59	1600	110
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40		1.1
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	2.7	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	2.9	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	33	46	78	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	34	49	81	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	1.0	29	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	24	88	23	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	200	170	130	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	230	280	150	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	260	330	230	< 10

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179		Chemtest Sample ID.:		546616	546618	546620	546621
Order No.: 254391		Client Sample Ref.:		BH102	BH102	BHC27	BHC27
		Client Sample ID.:		V1	V3	V2	V3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.30	1.50	0.60	1.60
		Date Sampled:		24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
		Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	3.6	< 0.10	1.6
Anthracene	U	2700	mg/kg	0.10	0.26	< 0.10	0.36
Fluoranthene	U	2700	mg/kg	0.10	4.0	< 0.10	4.2
Pyrene	U	2700	mg/kg	0.10	3.3	< 0.10	4.0
Benzo[a]anthracene	U	2700	mg/kg	0.10	1.0	< 0.10	2.6
Chrysene	U	2700	mg/kg	0.10	1.7	< 0.10	3.3
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	1.7	< 0.10	4.1
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	0.54	< 0.10	1.7
Benzo[a]pyrene	U	2700	mg/kg	0.10	1.2	< 0.10	2.7
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	0.72	< 0.10	1.9
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.55
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	0.66	< 0.10	1.8
Total Of 16 PAH's	U	2700	mg/kg	2.0	19	< 2.0	29
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179	Chemtest Sample ID.:				546616	546618	546620	546621
Order No.: 254391	Client Sample Ref.:				BH102	BH102	BHC27	BHC27
	Client Sample ID.:				V1	V3	V2	V3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.50	0.60	1.60
	Date Sampled:				24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	1.0 µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179	Chemtest Sample ID.:				546616	546618	546620	546621
Order No.: 254391	Client Sample Ref.:				BH102	BH102	BHC27	BHC27
	Client Sample ID.:				V1	V3	V2	V3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.50	0.60	1.60
	Date Sampled:				24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	1.2	< 0.50	1.7	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.57	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179	Chemtest Sample ID.:				546616	546618	546620	546621
Order No.: 254391	Client Sample Ref.:				BH102	BH102	BHC27	BHC27
	Client Sample ID.:				V1	V3	V2	V3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.50	0.60	1.60
	Date Sampled:				24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
Fluoranthene	U	2790	mg/kg	0.50	1.9	< 0.50	5.7	< 0.50
Pyrene	U	2790	mg/kg	0.50	1.6	< 0.50	4.8	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	0.89	< 0.50	3.9	< 0.50
Chrysene	U	2790	mg/kg	0.50	1.2	< 0.50	3.7	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	1.5	< 0.50	5.2	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	2.1	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	0.79	< 0.50	3.2	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	0.61	< 0.50	2.6	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	1.0	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	0.70	< 0.50	2.8	< 0.50
PCB 28	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 81	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 52	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 90+101	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 118	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 153	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 138	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 180	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010			< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12			< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10	< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44 Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.



## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

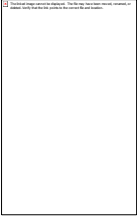
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-31797-1

**Initial Date of Issue:** 07-Dec-2017

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 254391 L14 Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 29-Nov-2017

**Order No.:** 254391      **Date Instructed:** 29-Nov-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7      **Results Due:** 07-Dec-2017

**Date Approved:** 07-Dec-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

## Results - 2 Stage WAC

**Project: 254391 L14 Lake Lothing**

Chemtest Job No: 17-31797							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 546633							Limits			
Sample Ref: V1							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID: BHC102										
Top Depth(m): 0.30										
Bottom Depth(m):										
Sampling Date: 24-Nov-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				7.2	3	5	6
Loss On Ignition	2610	U	%				11	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				140	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				18	100	--	--
pH	2010	U					11.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.11	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1450	U	0.0023	0.0028	< 0.050	< 0.050	0.5	2	25	
Barium	1450	U	0.090	0.032	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	0.042	0.013	0.083	0.17	0.5	10	70	
Copper	1450	U	0.014	0.0064	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.012	0.0034	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.5	10	50	
Antimony	1450	U	0.0044	0.0038	< 0.010	0.039	0.06	0.7	5	
Selenium	1450	U	0.0021	0.0017	< 0.010	0.017	0.1	0.5	7	
Zinc	1450	U	0.0010	< 0.0010	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	19	3.5	38	55	800	15000	25000	
Fluoride	1220	U	0.24	0.19	< 1.0	2.0	10	150	500	
Sulphate	1220	U	70	24	140	300	1000	20000	50000	
Total Dissolved Solids	1020	N	260	180	520	1900	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	19	12	< 50	130	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	13

Leachate Test Information	
Leachant volume 1st extract/l	0.325
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.225

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

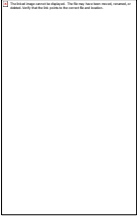
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-32753-1

**Initial Date of Issue:** 14-Dec-2017

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543 GI L14 Lake Loathing

**Quotation No.:** **Date Received:** 07-Dec-2017

**Order No.:** 2543 GI **Date Instructed:** 07-Dec-2017

**No. of Samples:** 3

**Turnaround (Wkdays):** 5 **Results Due:** 13-Dec-2017

**Date Approved:** 13-Dec-2017

**Approved By:**



**Details:** Robert Monk, Technical Manager

---

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-32753	17-32753	17-32753
Quotation No.:	Chemtest Sample ID.:				551527	551529	551535
Order No.: 2543 GI	Client Sample Ref.:				BHC102	BHC102	BHC102
	Client Sample ID.:				J4	J6	J12
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				2.50	4.50	10.50
	Date Sampled:				04-Dec-2017	04-Dec-2017	04-Dec-2017
Determinand	Accred.	SOP	Units	LOD			
Moisture	N	2030	%	0.020	20	2.7	15
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	70	2.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	220	15	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	190	21	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	100	18	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	580	56	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	4.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	110	1.4	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	49	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	38	11	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	200	13	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	780	69	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.15
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.17
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-32753	17-32753	17-32753
Quotation No.:	Chemtest Sample ID.:				551527	551529	551535
Order No.: 2543 GI	Client Sample Ref.:				BHC102	BHC102	BHC102
	Client Sample ID.:				J4	J6	J12
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				2.50	4.50	10.50
	Date Sampled:				04-Dec-2017	04-Dec-2017	04-Dec-2017
Determinand	Accred.	SOP	Units	LOD			
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	110	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	190	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	2800	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	110	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0



## Results - Soil

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-32753	17-32753	17-32753
Quotation No.:	<b>Chemtest Sample ID.:</b>				551527	551529	551535
Order No.: 2543 GI	<b>Client Sample Ref.:</b>				BHC102	BHC102	BHC102
	<b>Client Sample ID.:</b>				J4	J6	J12
	<b>Sample Type:</b>				SOIL	SOIL	SOIL
	<b>Top Depth (m):</b>				2.50	4.50	10.50
	<b>Date Sampled:</b>				04-Dec-2017	04-Dec-2017	04-Dec-2017
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>			
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

SOP	Title	Parameters included	Method summary
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

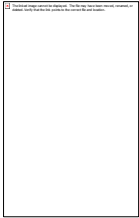
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-33041-1

**Initial Date of Issue:** 18-Dec-2017

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543 GI, L14 Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 11-Dec-2017

**Order No.:** 2543, GI      **Date Instructed:** 11-Dec-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 5      **Results Due:** 15-Dec-2017

**Date Approved:** 18-Dec-2017

**Approved By:**

**Details:** Robert Monk, Technical Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-33041
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				552743
Order No.: 2543, GI	Client Sample Ref.:				BHC101
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				2.10
	Date Sampled:				07-Dec-2017
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	9.8
Ammonia (Free) as N	U	1220	mg/l	0.010	0.12
Sulphate	U	1220	mg/l	1.0	82
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.9
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	2.0
Copper (Dissolved)	U	1450	µg/l	1.0	4.3
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	4.3
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 17-33041				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 552743				
Order No.: 2543, GI	Client Sample Ref.: BHC101				
	Client Sample ID.: J4				
	Sample Type: SOIL				
	Top Depth (m): 2.10				
	Date Sampled: 07-Dec-2017				
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		17-33041	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		552743	
Order No.: 2543, GI		Client Sample Ref.:		BHC101	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		2.10	
		Date Sampled:		07-Dec-2017	
Determinand	Accred.	SOP	Units	LOD	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-33041
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				552743
Order No.: 2543, GI	Client Sample Ref.:				BHC101
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				2.10
	Date Sampled:				07-Dec-2017
	Asbestos Lab:				COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	5.3
pH	U	2010		N/A	10.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.12
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	2.6
Sulphate (Total)	U	2430	%	0.010	0.34
Arsenic	U	2450	mg/kg	1.0	16
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	21
Copper	U	2450	mg/kg	0.50	9.1
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	16
Lead	U	2450	mg/kg	0.50	19
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	29
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	8.1
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	100
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	210
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	29
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	350
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	52
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	810
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	860
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	1200
Naphthalene	U	2700	mg/kg	0.10	< 0.10



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		17-33041		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		552743		
Order No.: 2543, GI	Client Sample Ref.:		BHC101		
	Client Sample ID.:		J4		
	Sample Type:		SOIL		
	Top Depth (m):		2.10		
	Date Sampled:		07-Dec-2017		
	Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD	
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-33041
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				552743
Order No.: 2543, GI	Client Sample Ref.:				BHC101
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				2.10
	Date Sampled:				07-Dec-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-33041
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				552743
Order No.: 2543, GI	Client Sample Ref.:				BHC101
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				2.10
	Date Sampled:				07-Dec-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				17-33041
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				552743
Order No.: 2543, GI	Client Sample Ref.:				BHC101
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				2.10
	Date Sampled:				07-Dec-2017
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

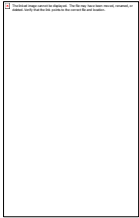
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-33044-1

**Initial Date of Issue:** 19-Dec-2017

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543 GI, L14 Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 11-Dec-2017

**Order No.:** 2543 GI      **Date Instructed:** 11-Dec-2017

**No. of Samples:** 1

**Turnaround (Wkdays):** 7      **Results Due:** 19-Dec-2017

**Date Approved:** 19-Dec-2017

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---



## Results - 2 Stage WAC

**Project: 2543 GI, L14 Lake Lothing**

Chemtest Job No: 17-33044							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 552760							Limits			
Sample Ref: BHC101							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID: J4										
Top Depth(m): 2.10										
Bottom Depth(m):										
Sampling Date: 07-Dec-2017										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				0.38	3	5	6
Loss On Ignition	2610	U	%				3.1	--	--	10
Total BTEX	2760	U	mg/kg				0.039	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				1500	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					10.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.097	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1450	U	0.0018	0.0012	< 0.050	< 0.050	0.5	2	25	
Barium	1450	U	0.020	0.0044	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	0.0090	0.0018	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	0.0029	< 0.0010	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.0052	< 0.0010	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.5	10	50	
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5	
Selenium	1450	U	0.0027	0.0012	< 0.010	0.014	0.1	0.5	7	
Zinc	1450	U	0.0070	0.0029	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	66	16	130	230	800	15000	25000	
Fluoride	1220	U	0.19	0.17	< 1.0	1.7	10	150	500	
Sulphate	1220	U	53	20	110	250	1000	20000	50000	
Total Dissolved Solids	1020	N	250	120	500	1400	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	23	13	< 50	150	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	6.2

Leachate Test Information	
Leachant volume 1st extract/l	0.339
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.259

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

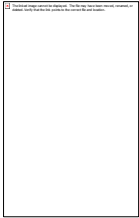
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 17-33607-1

**Initial Date of Issue:** 21-Dec-2017

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543 GI, L14 Lake Loathing, Lowestoft

**Quotation No.:** **Date Received:** 15-Dec-2017

**Order No.:** 2543 GI **Date Instructed:** 15-Dec-2017

**No. of Samples:** 3

**Turnaround (Wkdays):** 5 **Results Due:** 21-Dec-2017

**Date Approved:** 21-Dec-2017

**Approved By:**



**Details:** Martin Dyer, Laboratory Manager

---

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:		17-33607	17-33607	17-33607	
Quotation No.:		Chemtest Sample ID.:		555523	555525	555531	
Order No.: 2543 GI		Client Sample Ref.:		BHC101	BHC101	BHC101	
		Client Sample ID.:		J6	J8	J14	
		Sample Type:		SOIL	SOIL	SOIL	
		Top Depth (m):		3.00	4.00	10.00	
		Date Sampled:		12-Dec-2017	12-Dec-2017	13-Dec-2017	
Determinand	Accred.	SOP	Units	LOD			
Moisture	N	2030	%	0.020	15	25	20
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	60	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	260	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	270	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	450	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	1000	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	3.8	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	110	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	50	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	200	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	360	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	1400	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				17-33607	17-33607	17-33607
Quotation No.:	Chemtest Sample ID.:				555523	555525	555531
Order No.: 2543 GI	Client Sample Ref.:				BHC101	BHC101	BHC101
	Client Sample ID.:				J6	J8	J14
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				3.00	4.00	10.00
	Date Sampled:				12-Dec-2017	12-Dec-2017	13-Dec-2017
Determinand	Accred.	SOP	Units	LOD			
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	56	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	7.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	13	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	36	11	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	11	9.3	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

## Results - Soil

Client: Geosphere Environmental Ltd		Chemtest Job No.:			17-33607	17-33607	17-33607
Quotation No.:	Chemtest Sample ID.:				555523	555525	555531
Order No.: 2543 GI	Client Sample Ref.:				BHC101	BHC101	BHC101
	Client Sample ID.:				J6	J8	J14
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				3.00	4.00	10.00
	Date Sampled:				12-Dec-2017	12-Dec-2017	13-Dec-2017
Determinand	Accred.	SOP	Units	LOD			
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

SOP	Title	Parameters included	Method summary
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Diben[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.



## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

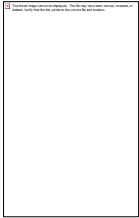
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Interim Report

---

**Report No.:** 18-00159-0

**Initial Date of Issue:**

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543 GI Lake Lothing

**Quotation No.:** **Date Received:** 04-Jan-2018

**Order No.:** 2543 GI **Date Instructed:** 05-Jan-2018

**No. of Samples:** 5

**Turnaround (Wkdays):** 10 **Results Due:** 18-Jan-2018

**Date Approved:**

**Approved By:**

**Details:**

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00159
Quotation No.:	<b>Chemtest Sample ID.:</b>				559757
Order No.: 2543 GI	Client Sample Ref.:				WSC19A
	Client Sample ID.:				J2
	Sample Type:				SOIL
	Top Depth (m):				0.80
	Date Sampled:				02-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.3
Ammonia (Free) as N	U	1220	mg/l	0.010	< 0.010
Sulphate	U	1220	mg/l	1.0	2.9
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	7.9
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.5
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	5.2
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	4.9
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00159
Quotation No.:	<b>Chemtest Sample ID.:</b>				559757
Order No.: 2543 GI	Client Sample Ref.:				WSC19A
	Client Sample ID.:				J2
	Sample Type:				SOIL
	Top Depth (m):				0.80
	Date Sampled:				02-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00159
Quotation No.:	<b>Chemtest Sample ID.:</b>				559757
Order No.: 2543 GI	Client Sample Ref.:				WSC19A
	Client Sample ID.:				J2
	Sample Type:				SOIL
	Top Depth (m):				0.80
	Date Sampled:				02-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-00159	18-00159	18-00159	18-00159
Quotation No.:	Chemtest Sample ID.:				559757	559759	559762	559763
Order No.: 2543 GI	Client Sample Ref.:				WSC19A	WSC19A	WSC21	WSC21
	Client Sample ID.:				J2	J4	J2	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.80	2.40	0.75	1.75
	Date Sampled:				02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A	-		-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected	
Moisture	N	2030	%	0.020	4.8	4.6	3.8	12
pH	U	2010		N/A	8.2	8.2	8.3	8.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	1.2	1.2	1.1	1.7
Sulphate (Total)	U	2430	%	0.010	< 0.010	< 0.010	< 0.010	0.018
Arsenic	U	2450	mg/kg	1.0	< 1.0	< 1.0	< 1.0	13
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	3.2	2.4	5.0	7.9
Copper	U	2450	mg/kg	0.50	5.4	1.8	2.9	5.5
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	2.1	1.4	2.9	5.3
Lead	U	2450	mg/kg	0.50	54	4.4	5.6	6.4
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	16	8.1	11	18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40		< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-00159	18-00159	18-00159	18-00159
Quotation No.:	Chemtest Sample ID.:				559757	559759	559762	559763
Order No.: 2543 GI	Client Sample Ref.:				WSC19A	WSC19A	WSC21	WSC21
	Client Sample ID.:				J2	J4	J2	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.80	2.40	0.75	1.75
	Date Sampled:				02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-00159	18-00159	18-00159	18-00159
Quotation No.:	Chemtest Sample ID.:				559757	559759	559762	559763
Order No.: 2543 GI	Client Sample Ref.:				WSC19A	WSC19A	WSC21	WSC21
	Client Sample ID.:				J2	J4	J2	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.80	2.40	0.75	1.75
	Date Sampled:				02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50



## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-00159	18-00159	18-00159	18-00159
Quotation No.:	Chemtest Sample ID.:				559757	559759	559762	559763
Order No.: 2543 GI	Client Sample Ref.:				WSC19A	WSC19A	WSC21	WSC21
	Client Sample ID.:				J2	J4	J2	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.80	2.40	0.75	1.75
	Date Sampled:				02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-00159	18-00159	18-00159	18-00159
Quotation No.:	Chemtest Sample ID.:				559757	559759	559762	559763
Order No.: 2543 GI	Client Sample Ref.:				WSC19A	WSC19A	WSC21	WSC21
	Client Sample ID.:				J2	J4	J2	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.80	2.40	0.75	1.75
	Date Sampled:				02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010			< 0.010	
PCB 81	N	2815	mg/kg	0.010	< 0.010			
PCB 52	U	2815	mg/kg	0.010			< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010			
PCB 105	N	2815	mg/kg	0.010	< 0.010			
PCB 90+101	U	2815	mg/kg	0.010			< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010			
PCB 118	U	2815	mg/kg	0.010			< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010			
PCB 153	U	2815	mg/kg	0.010			< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010			
PCB 138	U	2815	mg/kg	0.010			< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010			
PCB 180	U	2815	mg/kg	0.010			< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010			
PCB 157	N	2815	mg/kg	0.010	< 0.010			
PCB 167	N	2815	mg/kg	0.010	< 0.010			
PCB 169	N	2815	mg/kg	0.010	< 0.010			
PCB 189	N	2815	mg/kg	0.010	< 0.010			
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12			
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10			< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

## Results - 2 Stage WAC

**Project: 2543 GI Lake Lothing**

Chemtest Job No: 18-00159							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 559758							Limits			
Sample Ref: WSC19A							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID: J3										
Top Depth(m): 1.40										
Bottom Depth(m):										
Sampling Date: 02-Jan-2018										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				< 0.20	3	5	6
Loss On Ignition	2610	U	%				0.40	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.052	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1450	U	To Follow	To Follow	To Follow	To Follow	0.5	2	25	
Barium	1450	U	To Follow	To Follow	To Follow	To Follow	20	100	300	
Cadmium	1450	U	To Follow	To Follow	To Follow	To Follow	0.04	1	5	
Chromium	1450	U	To Follow	To Follow	To Follow	To Follow	0.5	10	70	
Copper	1450	U	To Follow	To Follow	To Follow	To Follow	2	50	100	
Mercury	1450	U	To Follow	To Follow	To Follow	To Follow	0.01	0.2	2	
Molybdenum	1450	U	To Follow	To Follow	To Follow	To Follow	0.5	10	30	
Nickel	1450	U	To Follow	To Follow	To Follow	To Follow	0.4	10	40	
Lead	1450	U	To Follow	To Follow	To Follow	To Follow	0.5	10	50	
Antimony	1450	U	To Follow	To Follow	To Follow	To Follow	0.06	0.7	5	
Selenium	1450	U	To Follow	To Follow	To Follow	To Follow	0.1	0.5	7	
Zinc	1450	U	To Follow	To Follow	To Follow	To Follow	4	50	200	
Chloride	1220	U	4.5	2.2	< 10	25	800	15000	25000	
Fluoride	1220	U	0.10	0.099	< 1.0	< 1.0	10	150	500	
Sulphate	1220	U	3.3	< 1.0	< 10	< 10	1000	20000	50000	
Total Dissolved Solids	1020	N	To Follow	To Follow	To Follow	To Follow	4000	60000	100000	
Phenol Index	1920	U	To Follow	To Follow	To Follow	To Follow	1	-	-	
Dissolved Organic Carbon	1610	U	To Follow	To Follow	To Follow	To Follow	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	5.6

Leachate Test Information	
Leachant volume 1st extract/l	0.340
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.261

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8- C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.

SOP	Title	Parameters included	Method summary
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44 Aromatics: >C5–C7, >C7–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

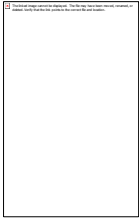
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-00159-1

**Initial Date of Issue:** 18-Jan-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543 GI Lake Lothing

**Quotation No.:** **Date Received:** 04-Jan-2018

**Order No.:** 2543 GI **Date Instructed:** 05-Jan-2018

**No. of Samples:** 5

**Turnaround (Wkdays):** 10 **Results Due:** 18-Jan-2018

**Date Approved:** 18-Jan-2018

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00159
Quotation No.:	<b>Chemtest Sample ID.:</b>				559757
Order No.: 2543 GI	Client Sample Ref.:				WSC19A
	Client Sample ID.:				J2
	Sample Type:				SOIL
	Top Depth (m):				0.80
	Date Sampled:				02-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.3
Ammonia (Free) as N	U	1220	mg/l	0.010	< 0.010
Sulphate	U	1220	mg/l	1.0	2.9
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	7.9
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.5
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	5.2
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	4.9
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00159
Quotation No.:	<b>Chemtest Sample ID.:</b>				559757
Order No.: 2543 GI	Client Sample Ref.:				WSC19A
	Client Sample ID.:				J2
	Sample Type:				SOIL
	Top Depth (m):				0.80
	Date Sampled:				02-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00159
Quotation No.:	<b>Chemtest Sample ID.:</b>				559757
Order No.: 2543 GI	Client Sample Ref.:				WSC19A
	Client Sample ID.:				J2
	Sample Type:				SOIL
	Top Depth (m):				0.80
	Date Sampled:				02-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-00159	18-00159	18-00159	18-00159
Quotation No.:	Chemtest Sample ID.:				559757	559759	559762	559763
Order No.: 2543 GI	Client Sample Ref.:				WSC19A	WSC19A	WSC21	WSC21
	Client Sample ID.:				J2	J4	J2	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.80	2.40	0.75	1.75
	Date Sampled:				02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A	-		-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected	
Moisture	N	2030	%	0.020	4.8	4.6	3.8	12
pH	U	2010		N/A	8.2	8.2	8.3	8.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	1.2	1.2	1.1	1.7
Sulphate (Total)	U	2430	%	0.010	< 0.010	< 0.010	< 0.010	0.018
Arsenic	U	2450	mg/kg	1.0	< 1.0	< 1.0	< 1.0	13
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	3.2	2.4	5.0	7.9
Copper	U	2450	mg/kg	0.50	5.4	1.8	2.9	5.5
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	2.1	1.4	2.9	5.3
Lead	U	2450	mg/kg	0.50	54	4.4	5.6	6.4
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	16	8.1	11	18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40		< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-00159	18-00159	18-00159	18-00159
Quotation No.:	Chemtest Sample ID.:				559757	559759	559762	559763
Order No.: 2543 GI	Client Sample Ref.:				WSC19A	WSC19A	WSC21	WSC21
	Client Sample ID.:				J2	J4	J2	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.80	2.40	0.75	1.75
	Date Sampled:				02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-00159	18-00159	18-00159	18-00159
Quotation No.:	Chemtest Sample ID.:				559757	559759	559762	559763
Order No.: 2543 GI	Client Sample Ref.:				WSC19A	WSC19A	WSC21	WSC21
	Client Sample ID.:				J2	J4	J2	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.80	2.40	0.75	1.75
	Date Sampled:				02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-00159	18-00159	18-00159	18-00159
Quotation No.:	Chemtest Sample ID.:				559757	559759	559762	559763
Order No.: 2543 GI	Client Sample Ref.:				WSC19A	WSC19A	WSC21	WSC21
	Client Sample ID.:				J2	J4	J2	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.80	2.40	0.75	1.75
	Date Sampled:				02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-00159	18-00159	18-00159	18-00159
Quotation No.:	Chemtest Sample ID.:				559757	559759	559762	559763
Order No.: 2543 GI	Client Sample Ref.:				WSC19A	WSC19A	WSC21	WSC21
	Client Sample ID.:				J2	J4	J2	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.80	2.40	0.75	1.75
	Date Sampled:				02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
	Asbestos Lab:				COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010			< 0.010	
PCB 81	N	2815	mg/kg	0.010	< 0.010			
PCB 52	U	2815	mg/kg	0.010			< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010			
PCB 105	N	2815	mg/kg	0.010	< 0.010			
PCB 90+101	U	2815	mg/kg	0.010			< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010			
PCB 118	U	2815	mg/kg	0.010			< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010			
PCB 153	U	2815	mg/kg	0.010			< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010			
PCB 138	U	2815	mg/kg	0.010			< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010			
PCB 180	U	2815	mg/kg	0.010			< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010			
PCB 157	N	2815	mg/kg	0.010	< 0.010			
PCB 167	N	2815	mg/kg	0.010	< 0.010			
PCB 169	N	2815	mg/kg	0.010	< 0.010			
PCB 189	N	2815	mg/kg	0.010	< 0.010			
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12			
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10			< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

## Results - 2 Stage WAC

**Project: 2543 GI Lake Lothing**

Chemtest Job No: 18-00159							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 559758							Limits			
Sample Ref: WSC19A							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID: J3										
Top Depth(m): 1.40										
Bottom Depth(m):										
Sampling Date: 02-Jan-2018										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				< 0.20	3	5	6
Loss On Ignition	2610	U	%				0.40	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.052	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1450	U	0.0012	< 0.0010	< 0.050	< 0.050	0.5	2	25	
Barium	1450	U	0.0042	0.0058	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.0018	< 0.0010	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	< 0.0010	0.0011	< 0.010	< 0.010	0.5	10	50	
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5	
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7	
Zinc	1450	U	< 0.0010	< 0.0010	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	4.5	2.2	< 10	25	800	15000	25000	
Fluoride	1220	U	0.10	0.099	< 1.0	< 1.0	10	150	500	
Sulphate	1220	U	3.3	< 1.0	< 10	< 10	1000	20000	50000	
Total Dissolved Solids	1020	N	53	31	110	340	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	8.4	7.7	< 50	78	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	5.6

Leachate Test Information	
Leachant volume 1st extract/l	0.340
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.261

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.



SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44 Aromatics: >C5–C7, >C7–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

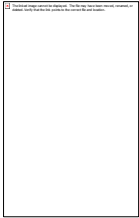
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-00228-1

**Initial Date of Issue:** 12-Jan-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543/GI Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 05-Jan-2018

**Order No.:** 2543/G1      **Date Instructed:** 05-Jan-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 5      **Results Due:** 11-Jan-2018

**Date Approved:** 11-Jan-2018

**Approved By:**



**Details:** Glynn Harvey, Laboratory Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-00228	18-00228	
Quotation No.: Q17-10179		Chemtest Sample ID.:		560161	560163	
Order No.: 2543/G1		Client Sample Ref.:		BHC14	BHC14	
		Client Sample ID.:		J5	J7	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		3.10	5.10	
		Date Sampled:		03-Jan-2018	03-Jan-2018	
Determinand	Accred.	SOP	Units	LOD		
Moisture	N	2030	%	0.020	16	11
pH	U	2010		N/A	9.3	8.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	< 0.50	< 0.50
Sulphate (Total)	U	2430	%	0.010	< 0.010	< 0.010
Arsenic	U	2450	mg/kg	1.0	5.1	5.1
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	4.6	5.1
Copper	U	2450	mg/kg	0.50	3.5	3.8
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	4.6	4.4
Lead	U	2450	mg/kg	0.50	3.2	2.7
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	13	10
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[C] < 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[C] < 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[C] < 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-00228	18-00228
Quotation No.: Q17-10179		Chemtest Sample ID.:		560161	560163
Order No.: 2543/G1		Client Sample Ref.:		BHC14	BHC14
		Client Sample ID.:		J5	J7
		Sample Type:		SOIL	SOIL
		Top Depth (m):		3.10	5.10
		Date Sampled:		03-Jan-2018	03-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	[C] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[C] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[C] < 1.0
Bromomethane	U	2760	µg/kg	20	[C] < 20
Chloroethane	N	2760	µg/kg	2.0	[C] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[C] < 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	[C] < 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	[C] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[C] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[C] < 1.0
Bromochloromethane	N	2760	µg/kg	5.0	[C] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[C] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[C] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[C] < 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	[C] < 1.0
Benzene	U	2760	µg/kg	1.0	[C] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[C] < 2.0
Trichloroethene	U	2760	µg/kg	1.0	[C] < 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	[C] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[C] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[C] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[C] < 10
Toluene	U	2760	µg/kg	1.0	[C] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[C] < 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	[C] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[C] < 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[C] < 2.0
Dibromochloromethane	N	2760	µg/kg	10	[C] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[C] < 5.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-00228	18-00228
Quotation No.: Q17-10179		Chemtest Sample ID.:		560161	560163
Order No.: 2543/G1		Client Sample Ref.:		BHC14	BHC14
		Client Sample ID.:		J5	J7
		Sample Type:		SOIL	SOIL
		Top Depth (m):		3.10	5.10
		Date Sampled:		03-Jan-2018	03-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
Chlorobenzene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[C] < 2.0 < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
o-Xylene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
Styrene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
Tribromomethane	N	2760	µg/kg	1.0	[C] < 1.0 < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[C] < 50 < 50
N-Propylbenzene	N	2760	µg/kg	1.0	[C] < 1.0 < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[C] < 1.0 < 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[C] < 1.0 < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[C] < 1.0 < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[C] < 1.0 < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[C] < 1.0 < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[C] < 50 < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[C] < 1.0 < 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[C] < 2.0 < 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[C] < 1.0 < 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
Phenol	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[C] < 0.50 < 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
Hexachloroethane	N	2790	mg/kg	0.50	[C] < 0.50 < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
Isophorone	U	2790	mg/kg	0.50	[C] < 0.50 < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[C] < 0.50 < 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-00228	18-00228
Quotation No.: Q17-10179		Chemtest Sample ID.:		560161	560163
Order No.: 2543/G1		Client Sample Ref.:		BHC14	BHC14
		Client Sample ID.:		J5	J7
		Sample Type:		SOIL	SOIL
		Top Depth (m):		3.10	5.10
		Date Sampled:		03-Jan-2018	03-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[C] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[C] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[C] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[C] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[C] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[C] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[C] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[C] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[C] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[C] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[C] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[C] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[C] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[C] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[C] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[C] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[C] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[C] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[C] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[C] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[C] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[C] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[C] < 0.50
Fluorene	U	2790	mg/kg	0.50	[C] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[C] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[C] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[C] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[C] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[C] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[C] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[C] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[C] < 0.50
Anthracene	U	2790	mg/kg	0.50	[C] < 0.50
Carbazole	U	2790	mg/kg	0.50	[C] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[C] < 0.50
Fluoranthene	U	2790	mg/kg	0.50	[C] < 0.50
Pyrene	U	2790	mg/kg	0.50	[C] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[C] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[C] < 0.50
Chrysene	U	2790	mg/kg	0.50	[C] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[C] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[C] < 0.50



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		18-00228	18-00228		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		560161	560163		
Order No.: 2543/G1	<b>Client Sample Ref.:</b>		BHC14	BHC14		
	<b>Client Sample ID.:</b>		J5	J7		
	<b>Sample Type:</b>		SOIL	SOIL		
	<b>Top Depth (m):</b>		3.10	5.10		
	<b>Date Sampled:</b>		03-Jan-2018	03-Jan-2018		
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>		
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

<b>Sample ID:</b>	<b>Sample Ref:</b>	<b>Sample ID:</b>	<b>Sampled Date:</b>	<b>Deviation Code(s):</b>	<b>Containers Received:</b>
560161	BHC14	J5	03-Jan-2018	C	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

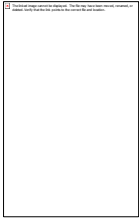
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-00330-1

**Initial Date of Issue:** 12-Jan-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543, GL Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 08-Jan-2018

**Order No.:** 2543, GL      **Date Instructed:** 08-Jan-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 5      **Results Due:** 12-Jan-2018

**Date Approved:** 11-Jan-2018

**Approved By:**

**Details:** Robert Monk, Technical Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00330
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				560625
Order No.: 2543, GL	Client Sample Ref.:				BHC102
	Client Sample ID.:				W1
	Sample Type:				WATER
	Date Sampled:				04-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	0.25
Sulphur	N	1220	mg/l	1.0	18
Sulphate	U	1220	mg/l	1.0	53
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	9.2
Boron (Dissolved)	U	1450	µg/l	20	150
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	5.1
Copper (Dissolved)	U	1450	µg/l	1.0	8.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	9.9
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	2.2
Zinc (Dissolved)	U	1450	µg/l	1.0	24
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00330
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				560625
Order No.: 2543, GL	Client Sample Ref.:				BHC102
	Client Sample ID.:				W1
	Sample Type:				WATER
	Date Sampled:				04-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-00330	
Quotation No.: Q17-10179		Chemtest Sample ID.:		560625	
Order No.: 2543, GL		Client Sample Ref.:		BHC102	
		Client Sample ID.:		W1	
		Sample Type:		WATER	
		Date Sampled:		04-Jan-2018	
Determinand	Accred.	SOP	Units	LOD	
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00330
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				560625
Order No.: 2543, GL	Client Sample Ref.:				BHC102
	Client Sample ID.:				W1
	Sample Type:				WATER
	Date Sampled:				04-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		18-00330	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		560625	
Order No.: 2543, GL		Client Sample Ref.:		BHC102	
		Client Sample ID.:		W1	
		Sample Type:		WATER	
		Date Sampled:		04-Jan-2018	
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Total Phenols	U	1920	mg/l	0.030	< 0.030

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

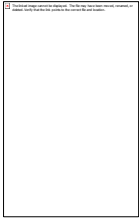
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Amended Report

---

**Report No.:** 18-00330-2

**Initial Date of Issue:** 12-Jan-2018      **Date of Re-Issue:** 18-Jan-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543, GL Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 08-Jan-2018

**Order No.:** 2543, GL      **Date Instructed:** 08-Jan-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 5      **Results Due:** 12-Jan-2018

**Date Approved:** 18-Jan-2018

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00330
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				560625
Order No.: 2543, GL	Client Sample Ref.:				BHC102
	Client Sample ID.:				W1
	Sample Type:				WATER
	Date Sampled:				04-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	0.25
Sulphur	N	1220	mg/l	1.0	18
Sulphate	U	1220	mg/l	1.0	53
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	9.2
Boron (Dissolved)	U	1450	µg/l	20	150
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	5.1
Copper (Dissolved)	U	1450	µg/l	1.0	8.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	9.9
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	2.2
Zinc (Dissolved)	U	1450	µg/l	1.0	24
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	27
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	210
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	440
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	150
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	820
Total Petroleum Hydrocarbons	N	1675	µg/l	10	820
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00330
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				560625
Order No.: 2543, GL	Client Sample Ref.:				BHC102
	Client Sample ID.:				W1
	Sample Type:				WATER
	Date Sampled:				04-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-00330	
Quotation No.: Q17-10179		Chemtest Sample ID.:		560625	
Order No.: 2543, GL		Client Sample Ref.:		BHC102	
		Client Sample ID.:		W1	
		Sample Type:		WATER	
		Date Sampled:		04-Jan-2018	
Determinand	Accred.	SOP	Units	LOD	
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	1.5
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	1.4
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	11
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00330
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				560625
Order No.: 2543, GL	Client Sample Ref.:				BHC102
	Client Sample ID.:				W1
	Sample Type:				WATER
	Date Sampled:				04-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		18-00330	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		560625	
Order No.: 2543, GL		Client Sample Ref.:		BHC102	
		Client Sample ID.:		W1	
		Sample Type:		WATER	
		Date Sampled:		04-Jan-2018	
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Total Phenols	U	1920	mg/l	0.030	< 0.030

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

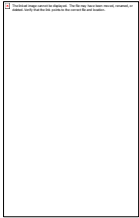
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 18-00356-1

**Initial Date of Issue:** 15-Jan-2018

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543,GI Lake Lothing

**Quotation No.:** Q17-10179

**Date Received:** 09-Jan-2018

**Order No.:** 2543,GI

**Date Instructed:** 09-Jan-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 5

**Results Due:** 15-Jan-2018

**Date Approved:** 15-Jan-2018

**Approved By:**



**Details:** Glynn Harvey, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-00356
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				560719
Order No.: 2543, GI	Client Sample Ref.:				BHC02
	Client Sample ID.:				W1
	Sample Type:				WATER
	Date Sampled:				05-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	6.9
Ammonia (Free) as N	U	1220	mg/l	0.010	< 0.010
Sulphur	N	1220	mg/l	1.0	22
Sulphate	U	1220	mg/l	1.0	65
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	3.1
Boron (Dissolved)	U	1450	µg/l	20	110
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	6.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	3.4
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	2.5
Zinc (Dissolved)	U	1450	µg/l	1.0	12
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		18-00356	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		560719	
Order No.: 2543, GI		Client Sample Ref.:		BHC02	
		Client Sample ID.:		W1	
		Sample Type:		WATER	
		Date Sampled:		05-Jan-2018	
Determinand	Accred.	SOP	Units	LOD	
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-00356	
Quotation No.: Q17-10179		Chemtest Sample ID.:		560719	
Order No.: 2543, GI		Client Sample Ref.:		BHC02	
		Client Sample ID.:		W1	
		Sample Type:		WATER	
		Date Sampled:		05-Jan-2018	
Determinand	Accred.	SOP	Units	LOD	
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50



<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 18-00356			
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 560719			
Order No.: 2543, GI	Client Sample Ref.: BHC02			
	Client Sample ID.: W1			
	Sample Type: WATER			
	Date Sampled: 05-Jan-2018			
Determinand	Accred.	SOP	Units	LOD
4-Chloroaniline	N	1790	µg/l	0.50
Hexachlorobutadiene	N	1790	µg/l	0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50
2-Methylnaphthalene	N	1790	µg/l	0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50
2-Chloronaphthalene	N	1790	µg/l	0.50
2-Nitroaniline	N	1790	µg/l	0.50
Acenaphthylene	N	1790	µg/l	0.50
Dimethylphthalate	N	1790	µg/l	0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50
Acenaphthene	N	1790	µg/l	0.50
3-Nitroaniline	N	1790	µg/l	0.50
Dibenzofuran	N	1790	µg/l	0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50
Fluorene	N	1790	µg/l	0.50
Diethyl Phthalate	N	1790	µg/l	0.50
4-Nitroaniline	N	1790	µg/l	0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50
Azobenzene	N	1790	µg/l	0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50
Hexachlorobenzene	N	1790	µg/l	0.50
Pentachlorophenol	N	1790	µg/l	0.50
Phenanthrene	N	1790	µg/l	0.50
Anthracene	N	1790	µg/l	0.50
Carbazole	N	1790	µg/l	0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50
Fluoranthene	N	1790	µg/l	0.50
Pyrene	N	1790	µg/l	0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50
Benzo[a]anthracene	N	1790	µg/l	0.50
Chrysene	N	1790	µg/l	0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50
Benzo[a]pyrene	N	1790	µg/l	0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50
4-Nitrophenol	N	1790	µg/l	0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		18-00356		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		560719		
Order No.: 2543, Gl	Client Sample Ref.:		BHC02		
	Client Sample ID.:		W1		
	Sample Type:		WATER		
	Date Sampled:		05-Jan-2018		
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Total Phenols	U	1920	mg/l	0.030	< 0.030

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

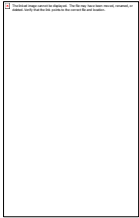
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-00959-1

**Initial Date of Issue:** 23-Jan-2018

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543,GI Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 15-Jan-2018

**Order No.:** 2543,GI **Date Instructed:** 15-Jan-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 23-Jan-2018

**Date Approved:** 23-Jan-2018

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

## Results - 2 Stage WAC

**Project: 2543,GI Lake Lothing**

Chemtest Job No: 18-00959							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 563299							Limits			
Sample Ref: TPC23A							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID: J1										
Top Depth(m): 1.1										
Bottom Depth(m):										
Sampling Date: 11-Jan-2018										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				6.1	3	5	6
Loss On Ignition	2610	U	%				4.3	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				120	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					11.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.29	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1450	U	0.0033	0.0089	< 0.050	0.080	0.5	2	25	
Barium	1450	U	0.019	0.012	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	0.0036	0.0035	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	0.0069	0.012	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.037	0.016	0.073	0.19	0.5	10	30	
Nickel	1450	U	< 0.0010	0.0010	< 0.050	< 0.050	0.4	10	40	
Lead	1450	U	< 0.0010	0.0028	< 0.010	0.024	0.5	10	50	
Antimony	1450	U	0.0090	0.013	0.018	0.12	0.06	0.7	5	
Selenium	1450	U	0.0015	0.0015	< 0.010	0.015	0.1	0.5	7	
Zinc	1450	U	0.0044	0.011	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	27	5.8	54	92	800	15000	25000	
Fluoride	1220	U	1.3	0.61	2.6	7.2	10	150	500	
Sulphate	1220	U	110	25	210	380	1000	20000	50000	
Total Dissolved Solids	1020	N	230	67	460	930	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	12	8.2	< 50	88	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.328
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.278

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

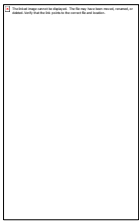
All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)





# Final Report

---

**Report No.:** 18-01626-1

**Initial Date of Issue:** 26-Jan-2018

**Client** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project** 2543 91 Lake Lothing

**Quotation No.:** Q17-10179 **Date Received:** 19-Jan-2018

**Order No.:** **Date Instructed:** 22-Jan-2018

**No. of Samples:** 3

**Turnaround (Wkdays):** 5 **Results Due:** 26-Jan-2018

**Date Approved:** 26-Jan-2018

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-01626	18-01626	18-01626
Quotation No.: Q17-10179	Chemtest Sample ID.:				566454	566457	566472
Order No.:	Client Sample Ref.:				BHC15	BHC15	BHC22
	Client Sample ID.:				J7	J10	J4
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				3.7	6.7	2.0
	Date Sampled:				17-Jan-2018	17-Jan-2018	17-Jan-2018
Determinand	Accred.	SOP	Units	LOD			
Moisture	N	2030	%	0.020	12	12	16
pH	U	2010		N/A	8.7	8.3	9.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	0.86
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	0.13
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammoniacal Nitrogen	U	2425	mg/kg	0.50	< 0.50	< 0.50	0.73
Sulphate (Total)	U	2430	mg/kg	100	< 100	< 100	3500
Arsenic	U	2450	mg/kg	1.0	2.5	3.3	18
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	4.3	6.2	25
Copper	U	2450	mg/kg	0.50	2.4	2.6	19
Mercury	U	2450	mg/kg	0.10	0.16	< 0.10	0.11
Nickel	U	2450	mg/kg	0.50	5.1	4.2	30
Lead	U	2450	mg/kg	0.50	2.9	2.0	12
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	0.80
Zinc	U	2450	mg/kg	0.50	9.6	8.8	38
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40	0.62
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-01626	18-01626	18-01626
Quotation No.: Q17-10179	Chemtest Sample ID.:				566454	566457	566472
Order No.:	Client Sample Ref.:				BHC15	BHC15	BHC22
	Client Sample ID.:				J7	J10	J4
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				3.7	6.7	2.0
	Date Sampled:				17-Jan-2018	17-Jan-2018	17-Jan-2018
Determinand	Accred.	SOP	Units	LOD			
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-01626	18-01626	18-01626
Quotation No.: Q17-10179	Chemtest Sample ID.:				566454	566457	566472
Order No.:	Client Sample Ref.:				BHC15	BHC15	BHC22
	Client Sample ID.:				J7	J10	J4
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				3.7	6.7	2.0
	Date Sampled:				17-Jan-2018	17-Jan-2018	17-Jan-2018
Determinand	Accred.	SOP	Units	LOD			
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-01626	18-01626	18-01626
Quotation No.: Q17-10179	Chemtest Sample ID.:				566454	566457	566472
Order No.:	Client Sample Ref.:				BHC15	BHC15	BHC22
	Client Sample ID.:				J7	J10	J4
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				3.7	6.7	2.0
	Date Sampled:				17-Jan-2018	17-Jan-2018	17-Jan-2018
Determinand	Accred.	SOP	Units	LOD			
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-01626	18-01626	18-01626
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				566454	566457	566472
Order No.:	<b>Client Sample Ref.:</b>				BHC15	BHC15	BHC22
	<b>Client Sample ID.:</b>				J7	J10	J4
	<b>Sample Type:</b>				SOIL	SOIL	SOIL
	<b>Top Depth (m):</b>				3.7	6.7	2.0
	<b>Date Sampled:</b>				17-Jan-2018	17-Jan-2018	17-Jan-2018
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>			
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

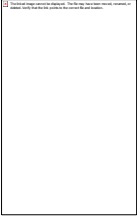
All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)





# Final Report

---

**Report No.:** 18-02499-1

**Initial Date of Issue:** 06-Feb-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179 **Date Received:** 29-Jan-2018

**Order No.:** 2543, GI **Date Instructed:** 31-Jan-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 5 **Results Due:** 06-Feb-2018

**Date Approved:** 06-Feb-2018

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-02499	18-02499
Quotation No.: Q17-10179		Chemtest Sample ID.:		570546	570549
Order No.: 2543, GI		Client Sample Ref.:		BHC17	BHC17
		Client Sample ID.:		J6	J9
		Sample Type:		SOIL	SOIL
		Top Depth (m):		2.50	5.30
		Date Sampled:		23-Jan-2018	23-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
Moisture	N	2030	%	0.020	20
pH	U	2010		N/A	6.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.021
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	3.0
Sulphate (Total)	U	2430	%	0.010	0.088
Arsenic	U	2450	mg/kg	1.0	18
Cadmium	U	2450	mg/kg	0.10	0.21
Chromium	U	2450	mg/kg	1.0	26
Copper	U	2450	mg/kg	0.50	20
Mercury	U	2450	mg/kg	0.10	0.31
Nickel	U	2450	mg/kg	0.50	33
Lead	U	2450	mg/kg	0.50	22
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	46
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	0.76
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-02499	18-02499
Quotation No.: Q17-10179		Chemtest Sample ID.:		570546	570549
Order No.: 2543, GI		Client Sample Ref.:		BHC17	BHC17
		Client Sample ID.:		J6	J9
		Sample Type:		SOIL	SOIL
		Top Depth (m):		2.50	5.30
		Date Sampled:		23-Jan-2018	23-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
Phenanthrene	U	2700	mg/kg	0.10	0.51
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	1.5
Pyrene	U	2700	mg/kg	0.10	1.5
Benzo[a]anthracene	U	2700	mg/kg	0.10	0.90
Chrysene	U	2700	mg/kg	0.10	0.98
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	1.0
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	0.57
Benzo[a]pyrene	U	2700	mg/kg	0.10	0.85
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	0.40
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	0.51
Total Of 16 PAH's	U	2700	mg/kg	2.0	8.7
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-02499	18-02499
Quotation No.: Q17-10179		Chemtest Sample ID.:		570546	570549
Order No.: 2543, GI		Client Sample Ref.:		BHC17	BHC17
		Client Sample ID.:		J6	J9
		Sample Type:		SOIL	SOIL
		Top Depth (m):		2.50	5.30
		Date Sampled:		23-Jan-2018	23-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-02499	18-02499
Quotation No.: Q17-10179		Chemtest Sample ID.:		570546	570549
Order No.: 2543, GI		Client Sample Ref.:		BHC17	BHC17
		Client Sample ID.:		J6	J9
		Sample Type:		SOIL	SOIL
		Top Depth (m):		2.50	5.30
		Date Sampled:		23-Jan-2018	23-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-02499	18-02499
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				570546	570549
Order No.: 2543, GI	<b>Client Sample Ref.:</b>				BHC17	BHC17
	<b>Client Sample ID.:</b>				J6	J9
	<b>Sample Type:</b>				SOIL	SOIL
	<b>Top Depth (m):</b>				2.50	5.30
	<b>Date Sampled:</b>				23-Jan-2018	23-Jan-2018
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>		
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30	

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

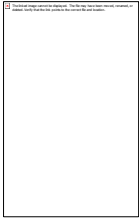
All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)





# Final Report

---

**Report No.:** 18-02644-1

**Initial Date of Issue:** 08-Feb-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** Lake Lothing, Lowestoft 2543 GI

**Quotation No.:** Q17-10179      **Date Received:** 30-Jan-2018

**Order No.:**      **Date Instructed:** 01-Feb-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 5      **Results Due:** 07-Feb-2018

**Date Approved:** 08-Feb-2018

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-02644	
Quotation No.: Q17-10179		Chemtest Sample ID.:		571137	
Order No.:		Client Sample Ref.:		BHC18	
		Sample Type:		SOIL	
		Top Depth (m):		0.1	
		Date Sampled:		26-Jan-2018	
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.7
Ammonia (Free) as N	U	1220	mg/l	0.050	0.14
Sulphate	U	1220	mg/l	1.0	15
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.7
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.2
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	1.8
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	3.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-02644	
Quotation No.: Q17-10179		Chemtest Sample ID.:		571137	
Order No.:		Client Sample Ref.:		BHC18	
		Sample Type:		SOIL	
		Top Depth (m):		0.1	
		Date Sampled:		26-Jan-2018	
Determinand	Accred.	SOP	Units	LOD	
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>			18-02644
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>			571137
Order No.:		Client Sample Ref.:			BHC18
		Sample Type:			SOIL
		Top Depth (m):			0.1
		Date Sampled:			26-Jan-2018
Determinand	Accred.	SOP	Units	LOD	
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-02644	
Quotation No.: Q17-10179		Chemtest Sample ID.:		571137	
Order No.:		Client Sample Ref.:		BHC18	
		Sample Type:		SOIL	
		Top Depth (m):		0.1	
		Date Sampled:		26-Jan-2018	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	6.8
pH	U	2010		N/A	8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.91
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	2.0
Sulphate (Total)	U	2430	%	0.010	0.057
Arsenic	U	2450	mg/kg	1.0	12
Cadmium	U	2450	mg/kg	0.10	0.12
Chromium	U	2450	mg/kg	1.0	14
Copper	U	2450	mg/kg	0.50	36
Mercury	U	2450	mg/kg	0.10	0.80
Nickel	U	2450	mg/kg	0.50	18
Lead	U	2450	mg/kg	0.50	52
Selenium	U	2450	mg/kg	0.20	0.25
Zinc	U	2450	mg/kg	0.50	83
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	12
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	12
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	24
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	24
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	36
Naphthalene	U	2700	mg/kg	0.10	0.44
Acenaphthylene	U	2700	mg/kg	0.10	0.99

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-02644	
Quotation No.: Q17-10179		Chemtest Sample ID.:		571137	
Order No.:		Client Sample Ref.:		BHC18	
		Sample Type:		SOIL	
		Top Depth (m):		0.1	
		Date Sampled:		26-Jan-2018	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Acenaphthene	U	2700	mg/kg	0.10	0.57
Fluorene	U	2700	mg/kg	0.10	0.40
Phenanthrene	U	2700	mg/kg	0.10	4.4
Anthracene	U	2700	mg/kg	0.10	2.2
Fluoranthene	U	2700	mg/kg	0.10	15
Pyrene	U	2700	mg/kg	0.10	14
Benzo[a]anthracene	U	2700	mg/kg	0.10	7.5
Chrysene	U	2700	mg/kg	0.10	6.7
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	9.2
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	3.8
Benzo[a]pyrene	U	2700	mg/kg	0.10	7.3
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	4.8
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	1.3
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	5.1
Total Of 16 PAH's	U	2700	mg/kg	2.0	84
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-02644	
Quotation No.: Q17-10179		Chemtest Sample ID.:		571137	
Order No.:		Client Sample Ref.:		BHC18	
		Sample Type:		SOIL	
		Top Depth (m):		0.1	
		Date Sampled:		26-Jan-2018	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-02644	
Quotation No.: Q17-10179		Chemtest Sample ID.:		571137	
Order No.:		Client Sample Ref.:		BHC18	
		Sample Type:		SOIL	
		Top Depth (m):		0.1	
		Date Sampled:		26-Jan-2018	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	1.1
Pyrene	U	2790	mg/kg	0.50	1.0
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	0.69
Chrysene	U	2790	mg/kg	0.50	0.62



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-02644
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				571137
Order No.:	Client Sample Ref.:				BHC18
	Sample Type:				SOIL
	Top Depth (m):				0.1
	Date Sampled:				26-Jan-2018
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	1.1
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	0.77
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	0.57
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

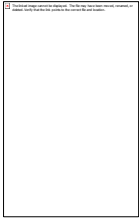
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Amended Report

---

**Report No.:** 18-02840-2

**Initial Date of Issue:** 12-Feb-2018      **Date of Re-Issue:** 15-Feb-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543 GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179      **Date Received:** 01-Feb-2018

**Order No.:**      **Date Instructed:** 01-Feb-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 7      **Results Due:** 09-Feb-2018

**Date Approved:** 12-Feb-2018

**Approved By:**



**Details:** Robert Monk, Technical Manager

---

## Results - 2 Stage WAC

**Project: 2543 GI Lake Lothing, Lowestoft**

Chemtest Job No: 18-02840							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 572076							Limits			
Sample Ref: BHC18							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID: J1										
Top Depth(m): 0.1										
Bottom Depth(m):										
Sampling Date: 26-Jan-2018										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				2.2	3	5	6
Loss On Ignition	2610	U	%				3.5	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				26	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				63	100	--	--
pH	2010	U					8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.016	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1450	U	< 0.0010	0.0041	< 0.050	< 0.050	0.5	2	25	
Barium	1450	U	0.0023	0.018	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70	
Copper	1450	U	0.0026	0.0084	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.0017	0.0021	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	< 0.0010	0.0079	< 0.050	0.066	0.4	10	40	
Lead	1450	U	< 0.0010	0.0098	< 0.010	0.082	0.5	10	50	
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5	
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7	
Zinc	1450	U	< 0.0010	0.021	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	1.0	4.6	< 10	40	800	15000	25000	
Fluoride	1220	U	1.3	0.39	2.6	5.4	10	150	500	
Sulphate	1220	U	5.5	21	11	180	1000	20000	50000	
Total Dissolved Solids	1020	N	50	23	100	270	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	15	14	< 50	140	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	9.3

Leachate Test Information	
Leachant volume 1st extract/l	0.332
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.289

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

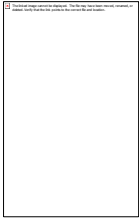
All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)





# Final Report

---

**Report No.:** 18-02978-1

**Initial Date of Issue:** 12-Feb-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** **Date Received:** 01-Feb-2018

**Order No.:** 2543 GI **Date Instructed:** 01-Feb-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 09-Feb-2018

**Date Approved:** 12-Feb-2018

**Approved By:**

**Details:** Robert Monk, Technical Manager

---

## Results - 2 Stage WAC

**Project: 2543,GI Lake Lothing, Lowestoft**

Chemtest Job No: 18-02978							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 572715							Limits			
Sample Ref: BHC17							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID:										
Top Depth(m): 2.50										
Bottom Depth(m):										
Sampling Date:										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				[A] 0.23	3	5	6
Loss On Ignition	2610	U	%				3.6	--	--	10
Total BTEX	2760	U	mg/kg				[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				[A] < 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					9.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.041	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1450	U	0.0017	0.0041	< 0.050	< 0.050	0.5	2	25	
Barium	1450	U	0.0091	0.032	< 0.50	< 0.50	20	100	300	
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	0.0089	0.028	< 0.050	0.25	0.5	10	70	
Copper	1450	U	0.0026	0.0061	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.0041	0.0027	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	0.0036	0.014	< 0.050	0.12	0.4	10	40	
Lead	1450	U	0.0019	0.0058	< 0.010	0.051	0.5	10	50	
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5	
Selenium	1450	U	0.0020	0.0013	< 0.010	0.014	0.1	0.5	7	
Zinc	1450	U	0.012	0.025	< 0.50	< 0.50	4	50	200	
Chloride	1220	U	< 1.0	1.5	< 10	12	800	15000	25000	
Fluoride	1220	U	0.12	0.29	< 1.0	2.6	10	150	500	
Sulphate	1220	U	23	21	45	210	1000	20000	50000	
Total Dissolved Solids	1020	N	43	55	84	530	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	27	14	53	160	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	19

Leachate Test Information	
Leachant volume 1st extract/l	0.309
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.308

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

## Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
572715	BHC17			A	Amber Glass 250ml
572715	BHC17			A	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

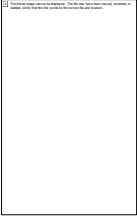
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-03574-1

**Initial Date of Issue:** 19-Feb-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543 91 LAKE LOTHING,  
LOWESTOFT

**Quotation No.:** Q17-10179                      **Date Received:** 07-Feb-2018

**Order No.:**    **Date Instructed:** 09-Feb-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 5                              **Results Due:** 15-Feb-2018

**Date Approved:** 16-Feb-2018

**Approved By:**



**Details:** Glynn Harvey, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-03574
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				575449
Order No.:	Client Sample Ref.:				BHC19
	Client Sample ID.:				J6
	Sample Type:				SOIL
	Top Depth (m):				3.00
	Date Sampled:				05-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	310
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	310
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	7.9
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	7.9
Total Petroleum Hydrocarbons	N	1675	µg/l	10	320
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-03574
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				575449
Order No.:	Client Sample Ref.:				BHC19
	Client Sample ID.:				J6
	Sample Type:				SOIL
	Top Depth (m):				3.00
	Date Sampled:				05-Feb-2018
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-03574
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				575449
Order No.:	Client Sample Ref.:				BHC19
	Client Sample ID.:				J6
	Sample Type:				SOIL
	Top Depth (m):				3.00
	Date Sampled:				05-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-03574	18-03574
Quotation No.: Q17-10179		Chemtest Sample ID.:		575449	575450
Order No.:		Client Sample Ref.:		BHC19	BHC19
		Client Sample ID.:		J6	J7
		Sample Type:		SOIL	SOIL
		Top Depth (m):		3.00	4.00
		Date Sampled:		05-Feb-2018	05-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Moisture	N	2030	%	0.020	17
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	50
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	50
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	50
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-03574	18-03574
Quotation No.: Q17-10179		Chemtest Sample ID.:		575449	575450
Order No.:		Client Sample Ref.:		BHC19	BHC19
		Client Sample ID.:		J6	J7
		Sample Type:		SOIL	SOIL
		Top Depth (m):		3.00	4.00
		Date Sampled:		05-Feb-2018	05-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	2.5
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-03574	18-03574
Quotation No.: Q17-10179		Chemtest Sample ID.:		575449	575450
Order No.:		Client Sample Ref.:		BHC19	BHC19
		Client Sample ID.:		J6	J7
		Sample Type:		SOIL	SOIL
		Top Depth (m):		3.00	4.00
		Date Sampled:		05-Feb-2018	05-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-03574	18-03574
Quotation No.: Q17-10179		Chemtest Sample ID.:		575449	575450
Order No.:		Client Sample Ref.:		BHC19	BHC19
		Client Sample ID.:		J6	J7
		Sample Type:		SOIL	SOIL
		Top Depth (m):		3.00	4.00
		Date Sampled:		05-Feb-2018	05-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-03574	18-03574
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				575449	575450
Order No.:	Client Sample Ref.:				BHC19	BHC19
	Client Sample ID.:				J6	J7
	Sample Type:				SOIL	SOIL
	Top Depth (m):				3.00	4.00
	Date Sampled:				05-Feb-2018	05-Feb-2018
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>		
PCB 126	N	2815	mg/kg	0.010		< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	
PCB 156	N	2815	mg/kg	0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

SOP	Title	Parameters included	Method summary
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-05699-1

**Initial Date of Issue:** 05-Mar-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist  
Joe Glenwright

**Project:** 2543,91 LAKE LOTHING

**Quotation No.:** Q17-10179      **Date Received:** 27-Feb-2018

**Order No.:** 2543,91      **Date Instructed:** 27-Feb-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 5      **Results Due:** 05-Mar-2018

**Date Approved:** 05-Mar-2018

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-05699	18-05699	
Quotation No.: Q17-10179		Chemtest Sample ID.:		585039	585049	
Order No.: 2543,91		Client Sample Ref.:		BHC20	BHC24	
		Client Sample ID.:		J7	J6	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		4.7	2.5	
		Date Sampled:		22-Feb-2018	22-Feb-2018	
Determinand	Accred.	SOP	Units	LOD		
Moisture	N	2030	%	0.020	9.5	11
pH	U	2010		N/A	10.4	8.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.034	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Ammoniacal Nitrogen	U	2425	mg/kg	0.50	3.9	1.2
Sulphate (Total)	U	2430	mg/kg	100	150	< 100
Arsenic	U	2450	mg/kg	1.0	3.6	1.5
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	10	3.4
Copper	U	2450	mg/kg	0.50	3.9	1.3
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	6.1	1.5
Lead	U	2450	mg/kg	0.50	5.5	4.4
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	12	4.2
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	< 0.40	< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-05699	18-05699
Quotation No.: Q17-10179		Chemtest Sample ID.:		585039	585049
Order No.: 2543,91		Client Sample Ref.:		BHC20	BHC24
		Client Sample ID.:		J7	J6
		Sample Type:		SOIL	SOIL
		Top Depth (m):		4.7	2.5
		Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-05699	18-05699
Quotation No.: Q17-10179		Chemtest Sample ID.:		585039	585049
Order No.: 2543,91		Client Sample Ref.:		BHC20	BHC24
		Client Sample ID.:		J7	J6
		Sample Type:		SOIL	SOIL
		Top Depth (m):		4.7	2.5
		Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-05699	18-05699
Quotation No.: Q17-10179		Chemtest Sample ID.:		585039	585049
Order No.: 2543,91		Client Sample Ref.:		BHC20	BHC24
		Client Sample ID.:		J7	J6
		Sample Type:		SOIL	SOIL
		Top Depth (m):		4.7	2.5
		Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-05699	18-05699
Quotation No.: Q17-10179		Chemtest Sample ID.:		585039	585049
Order No.: 2543,91		Client Sample Ref.:		BHC20	BHC24
		Client Sample ID.:		J7	J6
		Sample Type:		SOIL	SOIL
		Top Depth (m):		4.7	2.5
		Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 18-05699-1

**Initial Date of Issue:** 05-Mar-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist  
Joe Glenwright

**Project:** 2543,91 LAKE LOTHING

**Quotation No.:** Q17-10179                      **Date Received:** 27-Feb-2018

**Order No.:** 2543,91                              **Date Instructed:** 27-Feb-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 5                      **Results Due:** 05-Mar-2018

**Date Approved:** 05-Mar-2018

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-05699	18-05699	
Quotation No.: Q17-10179		Chemtest Sample ID.:		585039	585049	
Order No.: 2543,91		Client Sample Ref.:		BHC20	BHC24	
		Client Sample ID.:		J7	J6	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		4.7	2.5	
		Date Sampled:		22-Feb-2018	22-Feb-2018	
Determinand	Accred.	SOP	Units	LOD		
Moisture	N	2030	%	0.020	9.5	11
pH	U	2010		N/A	10.4	8.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.034	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Ammoniacal Nitrogen	U	2425	mg/kg	0.50	3.9	1.2
Sulphate (Total)	U	2430	mg/kg	100	150	< 100
Arsenic	U	2450	mg/kg	1.0	3.6	1.5
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	10	3.4
Copper	U	2450	mg/kg	0.50	3.9	1.3
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	6.1	1.5
Lead	U	2450	mg/kg	0.50	5.5	4.4
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	12	4.2
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	< 0.40	< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-05699	18-05699
Quotation No.: Q17-10179		Chemtest Sample ID.:		585039	585049
Order No.: 2543,91		Client Sample Ref.:		BHC20	BHC24
		Client Sample ID.:		J7	J6
		Sample Type:		SOIL	SOIL
		Top Depth (m):		4.7	2.5
		Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-05699	18-05699
Quotation No.: Q17-10179		Chemtest Sample ID.:		585039	585049
Order No.: 2543,91		Client Sample Ref.:		BHC20	BHC24
		Client Sample ID.:		J7	J6
		Sample Type:		SOIL	SOIL
		Top Depth (m):		4.7	2.5
		Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-05699	18-05699
Quotation No.: Q17-10179		Chemtest Sample ID.:		585039	585049
Order No.: 2543,91		Client Sample Ref.:		BHC20	BHC24
		Client Sample ID.:		J7	J6
		Sample Type:		SOIL	SOIL
		Top Depth (m):		4.7	2.5
		Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-05699	18-05699
Quotation No.: Q17-10179		Chemtest Sample ID.:		585039	585049
Order No.: 2543,91		Client Sample Ref.:		BHC20	BHC24
		Client Sample ID.:		J7	J6
		Sample Type:		SOIL	SOIL
		Top Depth (m):		4.7	2.5
		Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	Accred.	SOP	Units	LOD	
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

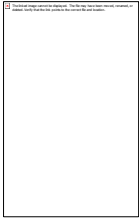
All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)





# Final Report

---

**Report No.:** 18-06475-1

**Initial Date of Issue:** 17-Apr-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist  
Lianne Fountain

**Project:** 2543 GI Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 08-Mar-2018

**Order No.:**      **Date Instructed:** 04-Apr-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 5      **Results Due:** 10-Apr-2018

**Date Approved:** 11-Apr-2018

**Approved By:**

**Details:** Robert Monk, Technical Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	
Order No.:		Client Sample Ref.:		BHC26	
		Client Sample ID.:		J2	
		Sample Type:		SOIL	
		Top Depth (m):		0.7	
		Date Sampled:		26-Feb-2018	
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	7.6
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050
Sulphate	U	1220	mg/l	1.0	9.9
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.9
Boron (Dissolved)	U	1450	µg/l	20	41
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.2
Copper (Dissolved)	U	1450	µg/l	1.0	4.6
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.1
Lead (Dissolved)	U	1450	µg/l	1.0	3.7
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	3.4
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	[B] < 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	[B] < 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		18-06475		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		588382		
Order No.:	Client Sample Ref.:		BHC26		
	Client Sample ID.:		J2		
	Sample Type:		SOIL		
	Top Depth (m):		0.7		
	Date Sampled:		26-Feb-2018		
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	[B] < 1.0
Toluene	U	1760	µg/l	1.0	[B] < 1.0
Ethylbenzene	U	1760	µg/l	1.0	[B] < 1.0
m & p-Xylene	U	1760	µg/l	1.0	[B] < 1.0
o-Xylene	U	1760	µg/l	1.0	[B] < 1.0
Methyl Tert-Butyl Ether	N	1760	mg/l	0.0010	[B] < 0.0010
Total Phenols	U	1920	mg/l	0.030	< 0.030

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	18-06475
Quotation No.: Q17-10179	Chemtest Sample ID.:		588382	588384	
Order No.:	Client Sample Ref.:		BHC26	BHC26	
	Client Sample ID.:		J2	J4	
	Sample Type:		SOIL	SOIL	
	Top Depth (m):		0.7	2.3	
	Date Sampled:		26-Feb-2018	26-Feb-2018	
	Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	8.7 16
pH	U	2010		N/A	[B] 8.8 [B] 4.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.71 < 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.016 0.020
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50 [B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50 [B] < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	[B] 2.3 [B] 2.2
Sulphate (Total)	U	2430	%	0.010	[B] 0.026 [B] 0.033
Arsenic	U	2450	mg/kg	1.0	4.7 25
Cadmium	U	2450	mg/kg	0.10	0.22 < 0.10
Chromium	U	2450	mg/kg	1.0	6.8 29
Copper	U	2450	mg/kg	0.50	9.0 12
Mercury	U	2450	mg/kg	0.10	< 0.10 < 0.10
Nickel	U	2450	mg/kg	0.50	7.3 16
Lead	U	2450	mg/kg	0.50	19 11
Selenium	U	2450	mg/kg	0.20	< 0.20 < 0.20
Zinc	U	2450	mg/kg	0.50	27 54
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50 < 0.50
Organic Matter	U	2625	%	0.40	[B] 0.47
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0 [B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0 [B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10 [B] < 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	18-06475
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	588384
Order No.:		Client Sample Ref.:		BHC26	BHC26
		Client Sample ID.:		J2	J4
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.7	2.3
		Date Sampled:		26-Feb-2018	26-Feb-2018
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Naphthalene	U	2700	mg/kg	0.10	[B] < 0.10
Acenaphthylene	U	2700	mg/kg	0.10	[B] < 0.10
Acenaphthene	U	2700	mg/kg	0.10	[B] < 0.10
Fluorene	U	2700	mg/kg	0.10	[B] < 0.10
Phenanthrene	U	2700	mg/kg	0.10	[B] < 0.10
Anthracene	U	2700	mg/kg	0.10	[B] < 0.10
Fluoranthene	U	2700	mg/kg	0.10	[B] < 0.10
Pyrene	U	2700	mg/kg	0.10	[B] < 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	[B] < 0.10
Chrysene	U	2700	mg/kg	0.10	[B] < 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	[B] < 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	[B] < 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	[B] < 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	[B] < 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	[B] < 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	[B] < 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	[B] < 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	[B] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[B] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[B] < 1.0
Bromomethane	U	2760	µg/kg	20	[B] < 20
Chloroethane	N	2760	µg/kg	2.0	[B] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[B] < 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[B] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0
Bromochloromethane	N	2760	µg/kg	5.0	[B] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[B] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[B] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[B] < 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	[B] < 1.0
Benzene	U	2760	µg/kg	1.0	[B] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[B] < 2.0
Trichloroethene	U	2760	µg/kg	1.0	[B] < 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	[B] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[B] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10
Toluene	U	2760	µg/kg	1.0	[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	18-06475	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	588384	
Order No.:		Client Sample Ref.:		BHC26	BHC26	
		Client Sample ID.:		J2	J4	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.7	2.3	
		Date Sampled:		26-Feb-2018	26-Feb-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
1,1,2-Trichloroethane	U	2760	µg/kg	10	[B] < 10	[B] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Dibromochloromethane	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Styrene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tribromomethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
N-Propylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	18-06475	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	588384	
Order No.:		Client Sample Ref.:		BHC26	BHC26	
		Client Sample ID.:		J2	J4	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.7	2.3	
		Date Sampled:		26-Feb-2018	26-Feb-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Isophorone	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Fluorene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Carbazole	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	18-06475
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	588384
Order No.:		Client Sample Ref.:		BHC26	BHC26
		Client Sample ID.:		J2	J4
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.7	2.3
		Date Sampled:		26-Feb-2018	26-Feb-2018
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50
Pyrene	U	2790	mg/kg	0.50	[B] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[B] < 0.50
Chrysene	U	2790	mg/kg	0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[B] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[B] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[B] < 0.50
PCB 28	U	2815	mg/kg	0.010	[B] < 0.010
PCB 52	U	2815	mg/kg	0.010	[B] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[B] < 0.010
PCB 118	U	2815	mg/kg	0.010	[B] < 0.010
PCB 153	U	2815	mg/kg	0.010	[B] < 0.010
PCB 138	U	2815	mg/kg	0.010	[B] < 0.010
PCB 180	U	2815	mg/kg	0.010	[B] < 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	[B] < 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30



## Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
588382	BHC26	J2	26-Feb-2018	B	Amber Glass 250ml
588382	BHC26	J2	26-Feb-2018	B	Plastic Tub 500g
588384	BHC26	J4	26-Feb-2018	B	Amber Glass 250ml
588384	BHC26	J4	26-Feb-2018	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

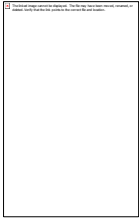
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-06475-1

**Initial Date of Issue:** 17-Apr-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist  
Lianne Fountain

**Project:** 2543 GI Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 08-Mar-2018

**Order No.:**      **Date Instructed:** 04-Apr-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 5      **Results Due:** 10-Apr-2018

**Date Approved:** 11-Apr-2018

**Approved By:**

**Details:** Robert Monk, Technical Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	
Order No.:		Client Sample Ref.:		BHC26	
		Client Sample ID.:		J2	
		Sample Type:		SOIL	
		Top Depth (m):		0.7	
		Date Sampled:		26-Feb-2018	
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	7.6
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050
Sulphate	U	1220	mg/l	1.0	9.9
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.9
Boron (Dissolved)	U	1450	µg/l	20	41
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.2
Copper (Dissolved)	U	1450	µg/l	1.0	4.6
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.1
Lead (Dissolved)	U	1450	µg/l	1.0	3.7
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	3.4
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	[B] < 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	[B] < 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		18-06475		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		588382		
Order No.:	Client Sample Ref.:		BHC26		
	Client Sample ID.:		J2		
	Sample Type:		SOIL		
	Top Depth (m):		0.7		
	Date Sampled:		26-Feb-2018		
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	[B] < 1.0
Toluene	U	1760	µg/l	1.0	[B] < 1.0
Ethylbenzene	U	1760	µg/l	1.0	[B] < 1.0
m & p-Xylene	U	1760	µg/l	1.0	[B] < 1.0
o-Xylene	U	1760	µg/l	1.0	[B] < 1.0
Methyl Tert-Butyl Ether	N	1760	mg/l	0.0010	[B] < 0.0010
Total Phenols	U	1920	mg/l	0.030	< 0.030

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	18-06475
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	588384
Order No.:		Client Sample Ref.:		BHC26	BHC26
		Client Sample ID.:		J2	J4
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.7	2.3
		Date Sampled:		26-Feb-2018	26-Feb-2018
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	8.7 16
pH	U	2010		N/A	[B] 8.8 [B] 4.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.71 < 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.016 0.020
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50 [B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50 [B] < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	[B] 2.3 [B] 2.2
Sulphate (Total)	U	2430	%	0.010	[B] 0.026 [B] 0.033
Arsenic	U	2450	mg/kg	1.0	4.7 25
Cadmium	U	2450	mg/kg	0.10	0.22 < 0.10
Chromium	U	2450	mg/kg	1.0	6.8 29
Copper	U	2450	mg/kg	0.50	9.0 12
Mercury	U	2450	mg/kg	0.10	< 0.10 < 0.10
Nickel	U	2450	mg/kg	0.50	7.3 16
Lead	U	2450	mg/kg	0.50	19 11
Selenium	U	2450	mg/kg	0.20	< 0.20 < 0.20
Zinc	U	2450	mg/kg	0.50	27 54
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50 < 0.50
Organic Matter	U	2625	%	0.40	[B] 0.47
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0 [B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0 [B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10 [B] < 10



Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	18-06475	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	588384	
Order No.:		Client Sample Ref.:		BHC26	BHC26	
		Client Sample ID.:		J2	J4	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.7	2.3	
		Date Sampled:		26-Feb-2018	26-Feb-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Naphthalene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Acenaphthylene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Acenaphthene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Fluorene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Phenanthrene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Anthracene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Fluoranthene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Pyrene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Chrysene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	[B] < 2.0	[B] < 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromomethane	U	2760	µg/kg	20	[B] < 20	[B] < 20
Chloroethane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	N	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	18-06475	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	588384	
Order No.:		Client Sample Ref.:		BHC26	BHC26	
		Client Sample ID.:		J2	J4	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.7	2.3	
		Date Sampled:		26-Feb-2018	26-Feb-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
1,1,2-Trichloroethane	U	2760	µg/kg	10	[B] < 10	[B] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Dibromochloromethane	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Styrene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tribromomethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
N-Propylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	18-06475	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	588384	
Order No.:		Client Sample Ref.:		BHC26	BHC26	
		Client Sample ID.:		J2	J4	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.7	2.3	
		Date Sampled:		26-Feb-2018	26-Feb-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Isophorone	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Fluorene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Carbazole	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06475	18-06475
Quotation No.: Q17-10179		Chemtest Sample ID.:		588382	588384
Order No.:		Client Sample Ref.:		BHC26	BHC26
		Client Sample ID.:		J2	J4
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.7	2.3
		Date Sampled:		26-Feb-2018	26-Feb-2018
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50
Pyrene	U	2790	mg/kg	0.50	[B] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[B] < 0.50
Chrysene	U	2790	mg/kg	0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[B] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[B] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[B] < 0.50
PCB 28	U	2815	mg/kg	0.010	[B] < 0.010
PCB 52	U	2815	mg/kg	0.010	[B] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[B] < 0.010
PCB 118	U	2815	mg/kg	0.010	[B] < 0.010
PCB 153	U	2815	mg/kg	0.010	[B] < 0.010
PCB 138	U	2815	mg/kg	0.010	[B] < 0.010
PCB 180	U	2815	mg/kg	0.010	[B] < 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	[B] < 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30

## Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
588382	BHC26	J2	26-Feb-2018	B	Amber Glass 250ml
588382	BHC26	J2	26-Feb-2018	B	Plastic Tub 500g
588384	BHC26	J4	26-Feb-2018	B	Amber Glass 250ml
588384	BHC26	J4	26-Feb-2018	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

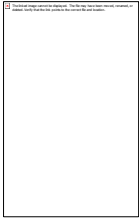
All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)





# Final Report

---

**Report No.:** 18-06487-1

**Initial Date of Issue:** 17-Apr-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist  
Lianne Fountain

**Project:** 2543 GI Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 08-Mar-2018

**Order No.:**      **Date Instructed:** 27-Mar-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 9      **Results Due:** 10-Apr-2018

**Date Approved:** 11-Apr-2018      **Subcon Results Due:** 10-Apr-2018

**Approved By:**

**Details:** Robert Monk, Technical Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588453	
Order No.:		Client Sample Ref.:		BHC23	
		Client Sample ID.:		J2	
		Sample Type:		SOIL	
		Top Depth (m):		0.8	
		Date Sampled:		05-Mar-2018	
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	7.1
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050
Sulphate	U	1220	mg/l	1.0	6.4
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.1
Boron (Dissolved)	U	1450	µg/l	20	25
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.6
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	1.8
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	2.8
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	[B] < 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	[B] < 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 18-06487				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 588453				
Order No.:	Client Sample Ref.: BHC23				
	Client Sample ID.: J2				
	Sample Type: SOIL				
	Top Depth (m): 0.8				
	Date Sampled: 05-Mar-2018				
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	[B] < 1.0
Toluene	U	1760	µg/l	1.0	[B] < 1.0
Ethylbenzene	U	1760	µg/l	1.0	[B] < 1.0
m & p-Xylene	U	1760	µg/l	1.0	[B] < 1.0
o-Xylene	U	1760	µg/l	1.0	[B] < 1.0
Methyl Tert-Butyl Ether	N	1760	mg/l	0.0010	[B] < 0.0010
Total Phenols	U	1920	mg/l	0.030	< 0.030

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	18-06487
Quotation No.: Q17-10179		Chemtest Sample ID.:		588453	588456
Order No.:		Client Sample Ref.:		BHC23	BHC23
		Client Sample ID.:		J2	J5
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.8	3.0
		Date Sampled:		05-Mar-2018	05-Mar-2018
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	5.9 14
pH	U	2010		N/A	7.3 8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40 < 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010 < 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50 [B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50 [B] < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	1.4 0.68
Sulphate (Total)	U	2430	%	0.010	< 0.010 < 0.010
Arsenic	U	2450	mg/kg	1.0	3.3 1.3
Cadmium	U	2450	mg/kg	0.10	< 0.10 < 0.10
Chromium	U	2450	mg/kg	1.0	4.0 2.3
Copper	U	2450	mg/kg	0.50	1.0 0.63
Mercury	U	2450	mg/kg	0.10	< 0.10 < 0.10
Nickel	U	2450	mg/kg	0.50	3.2 1.9
Lead	U	2450	mg/kg	0.50	3.8 1.9
Selenium	U	2450	mg/kg	0.20	< 0.20 < 0.20
Zinc	U	2450	mg/kg	0.50	6.7 3.9
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50 < 0.50
Organic Matter	U	2625	%	0.40	< 0.40 < 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0 [B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0 [B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10 [B] < 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	18-06487	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588453	588456	
Order No.:		Client Sample Ref.:		BHC23	BHC23	
		Client Sample ID.:		J2	J5	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.8	3.0	
		Date Sampled:		05-Mar-2018	05-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.52	< 0.10
Pyrene	U	2700	mg/kg	0.10	0.42	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromomethane	U	2760	µg/kg	20	[B] < 20	[B] < 20
Chloroethane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	N	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	18-06487	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588453	588456	
Order No.:		Client Sample Ref.:		BHC23	BHC23	
		Client Sample ID.:		J2	J5	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.8	3.0	
		Date Sampled:		05-Mar-2018	05-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
1,1,2-Trichloroethane	U	2760	µg/kg	10	[B] < 10	[B] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Dibromochloromethane	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Styrene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tribromomethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
N-Propylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	18-06487	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588453	588456	
Order No.:		Client Sample Ref.:		BHC23	BHC23	
		Client Sample ID.:		J2	J5	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.8	3.0	
		Date Sampled:		05-Mar-2018	05-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Isophorone	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Fluorene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Carbazole	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	18-06487	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588453	588456	
Order No.:		Client Sample Ref.:		BHC23	BHC23	
		Client Sample ID.:		J2	J5	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.8	3.0	
		Date Sampled:		05-Mar-2018	05-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Chrysene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010	
PCB 105	N	2815	mg/kg	0.010	< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010	
PCB 157	N	2815	mg/kg	0.010	< 0.010	
PCB 167	N	2815	mg/kg	0.010	< 0.010	
PCB 169	N	2815	mg/kg	0.010	< 0.010	
PCB 189	N	2815	mg/kg	0.010	< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30



## Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
588453	BHC23	J2	05-Mar-2018	B	Amber Glass 250ml
588453	BHC23	J2	05-Mar-2018	B	Plastic Tub 500g
588456	BHC23	J5	05-Mar-2018	B	Amber Glass 250ml
588456	BHC23	J5	05-Mar-2018	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

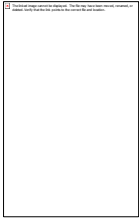
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-06487-1

**Initial Date of Issue:** 17-Apr-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist  
Lianne Fountain

**Project:** 2543 GI Lake Lothing

**Quotation No.:** Q17-10179      **Date Received:** 08-Mar-2018

**Order No.:**      **Date Instructed:** 27-Mar-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 9      **Results Due:** 10-Apr-2018

**Date Approved:** 11-Apr-2018      **Subcon Results Due:** 10-Apr-2018

**Approved By:**

**Details:** Robert Monk, Technical Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588453	
Order No.:		Client Sample Ref.:		BHC23	
		Client Sample ID.:		J2	
		Sample Type:		SOIL	
		Top Depth (m):		0.8	
		Date Sampled:		05-Mar-2018	
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	7.1
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050
Sulphate	U	1220	mg/l	1.0	6.4
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.1
Boron (Dissolved)	U	1450	µg/l	20	25
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.6
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	1.8
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	2.8
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	[B] < 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	[B] < 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 18-06487				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 588453				
Order No.:	Client Sample Ref.: BHC23				
	Client Sample ID.: J2				
	Sample Type: SOIL				
	Top Depth (m): 0.8				
	Date Sampled: 05-Mar-2018				
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	[B] < 1.0
Toluene	U	1760	µg/l	1.0	[B] < 1.0
Ethylbenzene	U	1760	µg/l	1.0	[B] < 1.0
m & p-Xylene	U	1760	µg/l	1.0	[B] < 1.0
o-Xylene	U	1760	µg/l	1.0	[B] < 1.0
Methyl Tert-Butyl Ether	N	1760	mg/l	0.0010	[B] < 0.0010
Total Phenols	U	1920	mg/l	0.030	< 0.030

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	18-06487
Quotation No.: Q17-10179	Chemtest Sample ID.:		588453	588456	
Order No.:	Client Sample Ref.:		BHC23	BHC23	
	Client Sample ID.:		J2	J5	
	Sample Type:		SOIL	SOIL	
	Top Depth (m):		0.8	3.0	
	Date Sampled:		05-Mar-2018	05-Mar-2018	
	Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	5.9 14
pH	U	2010		N/A	7.3 8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40 < 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010 < 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50 [B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50 [B] < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	1.4 0.68
Sulphate (Total)	U	2430	%	0.010	< 0.010 < 0.010
Arsenic	U	2450	mg/kg	1.0	3.3 1.3
Cadmium	U	2450	mg/kg	0.10	< 0.10 < 0.10
Chromium	U	2450	mg/kg	1.0	4.0 2.3
Copper	U	2450	mg/kg	0.50	1.0 0.63
Mercury	U	2450	mg/kg	0.10	< 0.10 < 0.10
Nickel	U	2450	mg/kg	0.50	3.2 1.9
Lead	U	2450	mg/kg	0.50	3.8 1.9
Selenium	U	2450	mg/kg	0.20	< 0.20 < 0.20
Zinc	U	2450	mg/kg	0.50	6.7 3.9
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50 < 0.50
Organic Matter	U	2625	%	0.40	< 0.40 < 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0 [B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0 [B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10 [B] < 10



Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	18-06487	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588453	588456	
Order No.:		Client Sample Ref.:		BHC23	BHC23	
		Client Sample ID.:		J2	J5	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.8	3.0	
		Date Sampled:		05-Mar-2018	05-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.52	< 0.10
Pyrene	U	2700	mg/kg	0.10	0.42	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromomethane	U	2760	µg/kg	20	[B] < 20	[B] < 20
Chloroethane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	N	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	18-06487	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588453	588456	
Order No.:		Client Sample Ref.:		BHC23	BHC23	
		Client Sample ID.:		J2	J5	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.8	3.0	
		Date Sampled:		05-Mar-2018	05-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
1,1,2-Trichloroethane	U	2760	µg/kg	10	[B] < 10	[B] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Dibromochloromethane	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Styrene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tribromomethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
N-Propylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Client: Geosphere Environmental Ltd	Chemtest Job No.:		18-06487	18-06487		
Quotation No.: Q17-10179	Chemtest Sample ID.:		588453	588456		
Order No.:	Client Sample Ref.:		BHC23	BHC23		
	Client Sample ID.:		J2	J5		
	Sample Type:		SOIL	SOIL		
	Top Depth (m):		0.8	3.0		
	Date Sampled:		05-Mar-2018	05-Mar-2018		
	Asbestos Lab:		COVENTRY			
Determinand	Accred.	SOP	Units	LOD		
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Isophorone	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Fluorene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Carbazole	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06487	18-06487	
Quotation No.: Q17-10179		Chemtest Sample ID.:		588453	588456	
Order No.:		Client Sample Ref.:		BHC23	BHC23	
		Client Sample ID.:		J2	J5	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.8	3.0	
		Date Sampled:		05-Mar-2018	05-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Chrysene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010	
PCB 105	N	2815	mg/kg	0.010	< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010	
PCB 157	N	2815	mg/kg	0.010	< 0.010	
PCB 167	N	2815	mg/kg	0.010	< 0.010	
PCB 169	N	2815	mg/kg	0.010	< 0.010	
PCB 189	N	2815	mg/kg	0.010	< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

## Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
588453	BHC23	J2	05-Mar-2018	B	Amber Glass 250ml
588453	BHC23	J2	05-Mar-2018	B	Plastic Tub 500g
588456	BHC23	J5	05-Mar-2018	B	Amber Glass 250ml
588456	BHC23	J5	05-Mar-2018	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-06961-1

**Initial Date of Issue:** 03-Apr-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 254JGI Lake Lothing, L34

<b>Quotation No.:</b>	Q17-10179	<b>Date Received:</b>	13-Mar-2018
<b>Order No.:</b>		<b>Date Instructed:</b>	27-Mar-2018
<b>No. of Samples:</b>	2		
<b>Turnaround (Wkdays):</b>	4	<b>Results Due:</b>	03-Apr-2018
<b>Date Approved:</b>	03-Apr-2018		

**Approved By:**



**Details:** Robert Monk, Technical Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06961	18-06961
Quotation No.: Q17-10179		Chemtest Sample ID.:		590907	590914
Order No.:		Client Sample Ref.:		BHC32	BHC32
		Client Sample ID.:		J2	J8
		Sample Type:		SOIL	SOIL
		Top Depth (m):		0.6	4.5
		Date Sampled:		07-Mar-2018	08-Mar-2018
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	12 16
pH	U	2010		N/A	8.9 8.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.55 1.1
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010 0.056
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50 [B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50 [B] < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	0.75 13
Sulphate (Total)	U	2430	%	0.010	< 0.010 0.34
Arsenic	U	2450	mg/kg	1.0	7.9 9.8
Cadmium	U	2450	mg/kg	0.10	< 0.10 < 0.10
Chromium	U	2450	mg/kg	1.0	10 8.9
Copper	U	2450	mg/kg	0.50	43 4.6
Mercury	U	2450	mg/kg	0.10	0.19 < 0.10
Nickel	U	2450	mg/kg	0.50	12 8.9
Lead	U	2450	mg/kg	0.50	22 8.4
Selenium	U	2450	mg/kg	0.20	< 0.20 < 0.20
Zinc	U	2450	mg/kg	0.50	32 18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50 < 0.50
Organic Matter	U	2625	%	0.40	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0 [B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0 [B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0 [B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10 [B] < 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06961	18-06961	
Quotation No.: Q17-10179		Chemtest Sample ID.:		590907	590914	
Order No.:		Client Sample Ref.:		BHC32	BHC32	
		Client Sample ID.:		J2	J8	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.6	4.5	
		Date Sampled:		07-Mar-2018	08-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.12	< 0.10
Pyrene	U	2700	mg/kg	0.10	0.15	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromomethane	U	2760	µg/kg	20	[B] < 20	[B] < 20
Chloroethane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	N	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06961	18-06961	
Quotation No.: Q17-10179		Chemtest Sample ID.:		590907	590914	
Order No.:		Client Sample Ref.:		BHC32	BHC32	
		Client Sample ID.:		J2	J8	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.6	4.5	
		Date Sampled:		07-Mar-2018	08-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
1,1,2-Trichloroethane	U	2760	µg/kg	10	[B] < 10	[B] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Dibromochloromethane	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Styrene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tribromomethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
N-Propylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06961	18-06961	
Quotation No.: Q17-10179		Chemtest Sample ID.:		590907	590914	
Order No.:		Client Sample Ref.:		BHC32	BHC32	
		Client Sample ID.:		J2	J8	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.6	4.5	
		Date Sampled:		07-Mar-2018	08-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Isophorone	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Fluorene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Carbazole	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-06961	18-06961	
Quotation No.: Q17-10179		Chemtest Sample ID.:		590907	590914	
Order No.:		Client Sample Ref.:		BHC32	BHC32	
		Client Sample ID.:		J2	J8	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		0.6	4.5	
		Date Sampled:		07-Mar-2018	08-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Chrysene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

## Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
590907	BHC32	J2	07-Mar-2018	B	Amber Glass 250ml
590907	BHC32	J2	07-Mar-2018	B	Plastic Tub 500g
590914	BHC32	J8	08-Mar-2018	B	Amber Glass 250ml
590914	BHC32	J8	08-Mar-2018	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.



## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

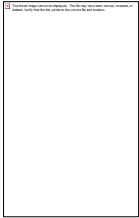
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-07089-1

**Initial Date of Issue:** 21-Mar-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Joe Glenwright  
Stephen Gilchrist

**Project:** 2543,GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179      **Date Received:** 14-Mar-2018

**Order No.:** 2543,GI      **Date Instructed:** 14-Mar-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 5      **Results Due:** 20-Mar-2018

**Date Approved:** 21-Mar-2018

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-07089
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				591585
Order No.: 2543, GI	Client Sample Ref.:				BHC08
	Client Sample ID.:				J4
	Sample Type:				SOIL
	Top Depth (m):				2.6
	Date Sampled:				09-Mar-2018
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	9.7
Ammonia (Free) as N	U	1220	mg/l	0.050	0.85
Sulphate	U	1220	mg/l	1.0	13
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	5.8
Boron (Dissolved)	U	1450	µg/l	20	30
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.21
Chromium (Dissolved)	U	1450	µg/l	1.0	52
Copper (Dissolved)	U	1450	µg/l	1.0	22
Mercury (Dissolved)	U	1450	µg/l	0.50	0.53
Nickel (Dissolved)	U	1450	µg/l	1.0	65
Lead (Dissolved)	U	1450	µg/l	1.0	19
Selenium (Dissolved)	U	1450	µg/l	1.0	7.8
Zinc (Dissolved)	U	1450	µg/l	1.0	190
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-07089	
Quotation No.: Q17-10179		Chemtest Sample ID.:		591585	
Order No.: 2543, GI		Client Sample Ref.:		BHC08	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		2.6	
		Date Sampled:		09-Mar-2018	
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>		<b>Chemtest Job No.:</b>		18-07089	
Quotation No.: Q17-10179		<b>Chemtest Sample ID.:</b>		591585	
Order No.: 2543, GI		Client Sample Ref.:		BHC08	
		Client Sample ID.:		J4	
		Sample Type:		SOIL	
		Top Depth (m):		2.6	
		Date Sampled:		09-Mar-2018	
Determinand	Accred.	SOP	Units	LOD	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-07089	18-07089
Quotation No.: Q17-10179		Chemtest Sample ID.:		591585	591586
Order No.: 2543, GI		Client Sample Ref.:		BHC08	BHC08
		Client Sample ID.:		J4	J5
		Sample Type:		SOIL	SOIL
		Top Depth (m):		2.6	3.7
		Date Sampled:		09-Mar-2018	09-Mar-2018
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	17 27
pH	U	2010		N/A	10.1 8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40 1.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010 0.18
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50 < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50 < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	0.91 29
Sulphate (Total)	U	2430	%	0.010	0.15 1.2
Arsenic	U	2450	mg/kg	1.0	4.8 15
Cadmium	U	2450	mg/kg	0.10	< 0.10 < 0.10
Chromium	U	2450	mg/kg	1.0	9.0 22
Copper	U	2450	mg/kg	0.50	9.5 11
Mercury	U	2450	mg/kg	0.10	0.11 < 0.10
Nickel	U	2450	mg/kg	0.50	14 22
Lead	U	2450	mg/kg	0.50	28 41
Selenium	U	2450	mg/kg	0.20	< 0.20 < 0.20
Zinc	U	2450	mg/kg	0.50	34 49
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50 < 0.50
Organic Matter	U	2625	%	0.40	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0 < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0 < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0 < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0 < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0 < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10 < 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-07089	18-07089	
Quotation No.: Q17-10179		Chemtest Sample ID.:		591585	591586	
Order No.: 2543, GI		Client Sample Ref.:		BHC08	BHC08	
		Client Sample ID.:		J4	J5	
		Sample Type:		SOIL	SOIL	
		Top Depth (m):		2.6	3.7	
		Date Sampled:		09-Mar-2018	09-Mar-2018	
		Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD		
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	1.2
Pyrene	U	2700	mg/kg	0.10	< 0.10	1.2
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	2.4
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-07089	18-07089
Quotation No.: Q17-10179		Chemtest Sample ID.:		591585	591586
Order No.: 2543, GI		Client Sample Ref.:		BHC08	BHC08
		Client Sample ID.:		J4	J5
		Sample Type:		SOIL	SOIL
		Top Depth (m):		2.6	3.7
		Date Sampled:		09-Mar-2018	09-Mar-2018
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50



Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-07089	18-07089
Quotation No.: Q17-10179		Chemtest Sample ID.:		591585	591586
Order No.: 2543, GI		Client Sample Ref.:		BHC08	BHC08
		Client Sample ID.:		J4	J5
		Sample Type:		SOIL	SOIL
		Top Depth (m):		2.6	3.7
		Date Sampled:		09-Mar-2018	09-Mar-2018
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	1.5
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-07089	18-07089
Quotation No.: Q17-10179		Chemtest Sample ID.:		591585	591586
Order No.: 2543, GI		Client Sample Ref.:		BHC08	BHC08
		Client Sample ID.:		J4	J5
		Sample Type:		SOIL	SOIL
		Top Depth (m):		2.6	3.7
		Date Sampled:		09-Mar-2018	09-Mar-2018
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44 Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

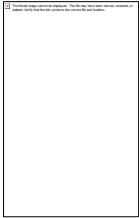
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-07130-1

**Initial Date of Issue:** 22-Mar-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Joe Glenwright  
Stephen Gilchrist

**Project:** 2543,GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179      **Date Received:** 14-Mar-2018

**Order No.:** 2543,GI      **Date Instructed:** 14-Mar-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 7      **Results Due:** 22-Mar-2018

**Date Approved:** 22-Mar-2018

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

---

## Results - 2 Stage WAC

**Project: 2543,GI Lake Lothing, Lowestoft**

Chemtest Job No: 18-07130							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 591820							Limits			
Sample Ref: BHC08							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill	
Sample ID: J4										
Top Depth(m): 2.6										
Bottom Depth(m):										
Sampling Date: 09-Mar-2018										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	U	%				< 0.20	3	5	6
Loss On Ignition	2610	U	%				1.5	--	--	10
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg				< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--
pH	2010	U					10.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.054	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1450	U	0.014	0.018	< 0.050	0.17	0.5	2	25	
Barium	1450	U	0.045	0.076	< 0.50	0.71	20	100	300	
Cadmium	1450	U	0.00014	0.00016	< 0.010	< 0.010	0.04	1	5	
Chromium	1450	U	0.050	0.082	0.098	0.77	0.5	10	70	
Copper	1450	U	0.015	0.023	< 0.050	< 0.050	2	50	100	
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2	
Molybdenum	1450	U	0.0037	0.0035	< 0.050	< 0.050	0.5	10	30	
Nickel	1450	U	0.024	0.036	< 0.050	0.34	0.4	10	40	
Lead	1450	U	0.023	0.041	0.045	0.38	0.5	10	50	
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5	
Selenium	1450	U	0.020	0.015	0.039	0.16	0.1	0.5	7	
Zinc	1450	U	0.076	0.11	< 0.50	1.0	4	50	200	
Chloride	1220	U	2.3	3.5	< 10	33	800	15000	25000	
Fluoride	1220	U	0.36	0.30	< 1.0	3.1	10	150	500	
Sulphate	1220	U	32	29	63	290	1000	20000	50000	
Total Dissolved Solids	1020	N	230	210	450	2100	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	17	16	< 50	160	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	19

Leachate Test Information	
Leachant volume 1st extract/l	0.310
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.265

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS



## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

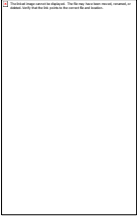
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-07811-1

**Initial Date of Issue:** 28-Mar-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543,GI Lake Lothing, L20

**Quotation No.:** Q17-10179      **Date Received:** 21-Mar-2018

**Order No.:** 2543,GI      **Date Instructed:** 22-Mar-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 5      **Results Due:** 28-Mar-2018

**Date Approved:** 28-Mar-2018

**Approved By:**



**Details:** Glynn Harvey, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-07811
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				595263
Order No.: 2543, GI	Client Sample Ref.:				BHC05
	Client Sample ID.:				J6
	Sample Type:				SOIL
	Top Depth (m):				2.5
	Date Sampled:				19-Mar-2018
Determinand	Accred.	SOP	Units	LOD	
Moisture	N	2030	%	0.020	30
pH	U	2010		N/A	9.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	3.1
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.073
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	150
Sulphate (Total)	U	2430	%	0.010	1.2
Arsenic	U	2450	mg/kg	1.0	22
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	28
Copper	U	2450	mg/kg	0.50	13
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	26
Lead	U	2450	mg/kg	0.50	31
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	64
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	1.9
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-07811
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				595263
Order No.: 2543, GI	Client Sample Ref.:				BHC05
	Client Sample ID.:				J6
	Sample Type:				SOIL
	Top Depth (m):				2.5
	Date Sampled:				19-Mar-2018
Determinand	Accred.	SOP	Units	LOD	
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-07811
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				595263
Order No.: 2543, GI	Client Sample Ref.:				BHC05
	Client Sample ID.:				J6
	Sample Type:				SOIL
	Top Depth (m):				2.5
	Date Sampled:				19-Mar-2018
Determinand	Accred.	SOP	Units	LOD	
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 18-07811				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 595263				
Order No.: 2543, GI	Client Sample Ref.: BHC05				
	Client Sample ID.: J6				
	Sample Type: SOIL				
	Top Depth (m): 2.5				
	Date Sampled: 19-Mar-2018				
Determinand	Accred.	SOP	Units	LOD	
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 18-07811				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 595263				
Order No.: 2543, GI	Client Sample Ref.: BHC05				
	Client Sample ID.: J6				
	Sample Type: SOIL				
	Top Depth (m): 2.5				
	Date Sampled: 19-Mar-2018				
Determinand	Accred.	SOP	Units	LOD	
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.



## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

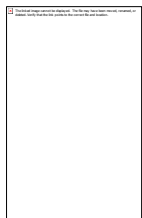
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-09432-1

**Initial Date of Issue:** 17-Apr-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543,GI Lake Loathing, L20

<b>Quotation No.:</b>	Q17-10179	<b>Date Received:</b>	06-Apr-2018
<b>Order No.:</b>	2543,GI	<b>Date Instructed:</b>	09-Apr-2018
<b>No. of Samples:</b>	3		
<b>Turnaround (Wkdays):</b>	5	<b>Results Due:</b>	13-Apr-2018
<b>Date Approved:</b>	16-Apr-2018		

**Approved By:**



**Details:** Glynn Harvey, Laboratory Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-09432	
Quotation No.: Q17-10179		Chemtest Sample ID.:		602978	
Order No.: 2543, GI		Client Sample Ref.:		BHC06B	
		Client Sample ID.:		J1	
		Sample Type:		SOIL	
		Top Depth (m):		0.45	
		Date Sampled:		29-Mar-2018	
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.7
Ammonia (Free) as N	U	1220	mg/l	0.050	0.16
Sulphate	U	1220	mg/l	1.0	13
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.0
Boron (Dissolved)	U	1450	µg/l	20	36
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	3.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.2
Lead (Dissolved)	U	1450	µg/l	1.0	1.2
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	2.3
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-09432	
Quotation No.: Q17-10179		Chemtest Sample ID.:		602978	
Order No.: 2543, GI		Client Sample Ref.:		BHC06B	
		Client Sample ID.:		J1	
		Sample Type:		SOIL	
		Top Depth (m):		0.45	
		Date Sampled:		29-Mar-2018	
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	mg/l	0.0010	< 0.0010
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-09432
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				602978
Order No.: 2543, GI	Client Sample Ref.:				BHC06B
	Client Sample ID.:				J1
	Sample Type:				SOIL
	Top Depth (m):				0.45
	Date Sampled:				29-Mar-2018
Determinand	Accred.	SOP	Units	LOD	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-09432	18-09432	18-09432
Quotation No.: Q17-10179	Chemtest Sample ID.:				602978	602981	602993
Order No.: 2543, GI	Client Sample Ref.:				BHC06B	BHC06B	BHC10
	Client Sample ID.:				J1	J4	J1
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.45	2.60	0.20
	Date Sampled:				29-Mar-2018	03-Apr-2018	03-Apr-2018
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-		-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected
Moisture	N	2030	%	0.020	10	32	9.4
pH	U	2010		N/A	8.1	9.2	10.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	1.0	2.5	1.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.068	0.12	0.55
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	17	92	7.1
Sulphate (Total)	U	2430	%	0.010	0.089	0.80	0.36
Arsenic	U	2450	mg/kg	1.0	11	27	25
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	2.4
Chromium	U	2450	mg/kg	1.0	11	34	50
Copper	U	2450	mg/kg	0.50	35	18	270
Mercury	U	2450	mg/kg	0.10	0.24	< 0.10	0.43
Nickel	U	2450	mg/kg	0.50	14	33	50
Lead	U	2450	mg/kg	0.50	67	49	280
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	51	76	590
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		1.7	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	9.8
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	27
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	2.7
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	39
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	39

Client: Geosphere Environmental Ltd		Chemtest Job No.:			18-09432	18-09432	18-09432
Quotation No.: Q17-10179		Chemtest Sample ID.:			602978	602981	602993
Order No.: 2543, GI		Client Sample Ref.:			BHC06B	BHC06B	BHC10
		Client Sample ID.:			J1	J4	J1
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.45	2.60	0.20
		Date Sampled:			29-Mar-2018	03-Apr-2018	03-Apr-2018
		Asbestos Lab:			COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.21
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.42
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.24
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.25
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	2.3
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	1.2
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	5.1
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	6.1
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	2.8
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	3.5
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	3.9
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	1.8
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	3.1
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	2.2
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	1.2
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	2.1
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	36
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-09432	18-09432	18-09432
Quotation No.: Q17-10179	Chemtest Sample ID.:				602978	602981	602993
Order No.: 2543, GI	Client Sample Ref.:				BHC06B	BHC06B	BHC10
	Client Sample ID.:				J1	J4	J1
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.45	2.60	0.20
	Date Sampled:				29-Mar-2018	03-Apr-2018	03-Apr-2018
	Asbestos Lab:				COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD			
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50



## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-09432	18-09432	18-09432
Quotation No.: Q17-10179	Chemtest Sample ID.:				602978	602981	602993
Order No.: 2543, GI	Client Sample Ref.:				BHC06B	BHC06B	BHC10
	Client Sample ID.:				J1	J4	J1
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.45	2.60	0.20
	Date Sampled:				29-Mar-2018	03-Apr-2018	03-Apr-2018
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.70
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.58
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-09432	18-09432	18-09432
Quotation No.: Q17-10179	Chemtest Sample ID.:				602978	602981	602993
Order No.: 2543, GI	Client Sample Ref.:				BHC06B	BHC06B	BHC10
	Client Sample ID.:				J1	J4	J1
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.45	2.60	0.20
	Date Sampled:				29-Mar-2018	03-Apr-2018	03-Apr-2018
	Asbestos Lab:				COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	3.5
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	3.8
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	2.2
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50	2.3
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	4.4
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	1.9
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	3.3
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	3.6
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	1.1
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	3.5
PCB 28	U	2815	mg/kg	0.010		< 0.010	
PCB 81	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 52	U	2815	mg/kg	0.010		< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 90+101	U	2815	mg/kg	0.010		< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 118	U	2815	mg/kg	0.010		< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 153	U	2815	mg/kg	0.010		< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 138	U	2815	mg/kg	0.010		< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 180	U	2815	mg/kg	0.010		< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

## Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
602978	BHC06B	J1	29-Mar-2018	B	Amber Glass 250ml
602978	BHC06B	J1	29-Mar-2018	B	Plastic Tub 500g

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44 Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

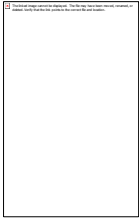
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 18-09752-1

**Initial Date of Issue:** 17-Apr-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543 GI Lake Loathing

**Quotation No.:** Q17-10179      **Date Received:** 10-Apr-2018

**Order No.:**      **Date Instructed:** 10-Apr-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 5      **Results Due:** 16-Apr-2018

**Date Approved:** 17-Apr-2018

**Approved By:**



**Details:** Glynn Harvey, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-09752
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				604511
Order No.:	Client Sample Ref.:				BHC10
	Client Sample ID.:				J11
	Sample Type:				SOIL
	Top Depth (m):				6.50
	Date Sampled:				05-Apr-2018
Determinand	Accred.	SOP	Units	LOD	
Moisture	N	2030	%	0.020	24
pH	U	2010		N/A	9.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	1.6
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.099
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	27
Sulphate (Total)	U	2430	%	0.010	0.31
Arsenic	U	2450	mg/kg	1.0	5.8
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	8.2
Copper	U	2450	mg/kg	0.50	3.9
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	8.0
Lead	U	2450	mg/kg	0.50	9.8
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10



<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-09752
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				604511
Order No.:	Client Sample Ref.:				BHC10
	Client Sample ID.:				J11
	Sample Type:				SOIL
	Top Depth (m):				6.50
	Date Sampled:				05-Apr-2018
Determinand	Accred.	SOP	Units	LOD	
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-09752	
Quotation No.: Q17-10179		Chemtest Sample ID.:		604511	
Order No.:		Client Sample Ref.:		BHC10	
		Client Sample ID.:		J11	
		Sample Type:		SOIL	
		Top Depth (m):		6.50	
		Date Sampled:		05-Apr-2018	
Determinand	Accred.	SOP	Units	LOD	
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-09752	
Quotation No.: Q17-10179		Chemtest Sample ID.:		604511	
Order No.:		Client Sample Ref.:		BHC10	
		Client Sample ID.:		J11	
		Sample Type:		SOIL	
		Top Depth (m):		6.50	
		Date Sampled:		05-Apr-2018	
Determinand	Accred.	SOP	Units	LOD	
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 18-09752				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 604511				
Order No.:	Client Sample Ref.: BHC10				
	Client Sample ID.: J11				
	Sample Type: SOIL				
	Top Depth (m): 6.50				
	Date Sampled: 05-Apr-2018				
Determinand	Accred.	SOP	Units	LOD	
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

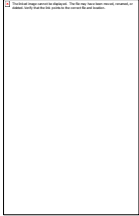
All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

**Report No.:** 18-11312-1

**Initial Date of Issue:** 03-May-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Stephen Gilchrist

**Project:** 2543, GI Lake Loathing

**Quotation No.:** Q17-10179 **Date Received:** 25-Apr-2018

**Order No.:** 2543, GI **Date Instructed:** 26-Apr-2018

**No. of Samples:** 4

**Turnaround (Wkdays):** 5 **Results Due:** 02-May-2018

**Date Approved:** 03-May-2018

**Approved By:**

**Details:** Martin Dyer, Laboratory Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-11312	
Quotation No.: Q17-10179		Chemtest Sample ID.:		612825	
Order No.: 2543, GI		Client Sample Ref.:		BHC01	
		Client Sample ID.:		J1	
		Sample Type:		SOIL	
		Top Depth (m):		0.30	
		Date Sampled:		19-Apr-2018	
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.6
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050
Sulphate	U	1220	mg/l	1.0	< 1.0
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	1.1
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10



Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-11312	
Quotation No.: Q17-10179		Chemtest Sample ID.:		612825	
Order No.: 2543, GI		Client Sample Ref.:		BHC01	
		Client Sample ID.:		J1	
		Sample Type:		SOIL	
		Top Depth (m):		0.30	
		Date Sampled:		19-Apr-2018	
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b> 18-11312				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 612825				
Order No.: 2543, GI	Client Sample Ref.: BHC01				
	Client Sample ID.: J1				
	Sample Type: SOIL				
	Top Depth (m): 0.30				
	Date Sampled: 19-Apr-2018				
Determinand	Accred.	SOP	Units	LOD	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:		18-11312	18-11312	18-11312	18-11312	
Quotation No.: Q17-10179	Chemtest Sample ID.:		612825	612828	612839	612841	
Order No.: 2543, GI	Client Sample Ref.:		BHC01	BHC01	TPC09	TPC09	
	Client Sample ID.:		J1	J4	J1	J3	
	Sample Type:		SOIL	SOIL	SOIL	SOIL	
	Top Depth (m):		0.30	1.70	0.20	1.50	
	Date Sampled:		19-Apr-2018	19-Apr-2018	23-Apr-2018	23-Apr-2018	
	Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-		-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected
Moisture	N	2030	%	0.020	4.2	15	12
pH	U	2010		N/A	8.6	8.7	8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	0.71
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	0.016
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	4.9
Ammonium (Extractable)	U	2425	mg/kg	0.50	1.2	< 0.50	1.6
Sulphate (Total)	U	2430	%	0.010	0.018	< 0.010	0.16
Arsenic	U	2450	mg/kg	1.0	4.5	2.0	24
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	0.19
Chromium	U	2450	mg/kg	1.0	6.6	3.4	10
Copper	U	2450	mg/kg	0.50	9.8	1.8	810
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	1.3
Nickel	U	2450	mg/kg	0.50	7.7	3.0	25
Lead	U	2450	mg/kg	0.50	19	4.3	340
Selenium	U	2450	mg/kg	0.20	0.23	0.20	1.3
Zinc	U	2450	mg/kg	0.50	23	9.4	150
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	5.3
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	58
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	64
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	1.3
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	190
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	190
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	250

Client: Geosphere Environmental Ltd	Chemtest Job No.:		18-11312	18-11312	18-11312	18-11312		
Quotation No.: Q17-10179	Chemtest Sample ID.:		612825	612828	612839	612841		
Order No.: 2543, GI	Client Sample Ref.:		BHC01	BHC01	TPC09	TPC09		
	Client Sample ID.:		J1	J4	J1	J3		
	Sample Type:		SOIL	SOIL	SOIL	SOIL		
	Top Depth (m):		0.30	1.70	0.20	1.50		
	Date Sampled:		19-Apr-2018	19-Apr-2018	23-Apr-2018	23-Apr-2018		
	Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY		
Determinand	Accred.	SOP	Units	LOD				
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	2.9	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.29	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.25	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.66	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	1.6	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.30	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	1.0	< 0.10	1.2	0.75
Pyrene	U	2700	mg/kg	0.10	0.82	< 0.10	1.4	0.51
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.60	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.94	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.64	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.43	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.56	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	12	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-11312	18-11312	18-11312	18-11312
Quotation No.: Q17-10179	Chemtest Sample ID.:				612825	612828	612839	612841
Order No.: 2543, GI	Client Sample Ref.:				BHC01	BHC01	TPC09	TPC09
	Client Sample ID.:				J1	J4	J1	J3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.70	0.20	1.50
	Date Sampled:				19-Apr-2018	19-Apr-2018	23-Apr-2018	23-Apr-2018
	Asbestos Lab:				COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD				
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:		18-11312	18-11312	18-11312	18-11312	
Quotation No.: Q17-10179	Chemtest Sample ID.:		612825	612828	612839	612841	
Order No.: 2543, GI	Client Sample Ref.:		BHC01	BHC01	TPC09	TPC09	
	Client Sample ID.:		J1	J4	J1	J3	
	Sample Type:		SOIL	SOIL	SOIL	SOIL	
	Top Depth (m):		0.30	1.70	0.20	1.50	
	Date Sampled:		19-Apr-2018	19-Apr-2018	23-Apr-2018	23-Apr-2018	
	Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	1.0	< 0.50	0.87
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

## Results - Soil

Client: Geosphere Environmental Ltd	Chemtest Job No.:		18-11312	18-11312	18-11312	18-11312		
Quotation No.: Q17-10179	Chemtest Sample ID.:		612825	612828	612839	612841		
Order No.: 2543, GI	Client Sample Ref.:		BHC01	BHC01	TPC09	TPC09		
	Client Sample ID.:		J1	J4	J1	J3		
	Sample Type:		SOIL	SOIL	SOIL	SOIL		
	Top Depth (m):		0.30	1.70	0.20	1.50		
	Date Sampled:		19-Apr-2018	19-Apr-2018	23-Apr-2018	23-Apr-2018		
	Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY		
Determinand	Accred.	SOP	Units	LOD				
Fluoranthene	U	2790	mg/kg	0.50	1.2	< 0.50	1.5	< 0.50
Pyrene	U	2790	mg/kg	0.50	0.83	< 0.50	1.2	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	0.64	< 0.50	0.77	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.98	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	0.69	< 0.50	1.2	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.71	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.59	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 81	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 77	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 114	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 118	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 123	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 126	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 156	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010		< 0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10		< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.



SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds (cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quantitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 18-13032-1

**Initial Date of Issue:** 22-May-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Tom Powling

**Project:** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179                      **Date Received:** 10-May-2018

**Order No.:** 2543, GI                              **Date Instructed:** 16-May-2018

**No. of Samples:** 1

**Turnaround (Wkdays):** 5                      **Results Due:** 22-May-2018

**Date Approved:** 22-May-2018

**Approved By:**  


**Details:** Glynn Harvey, Laboratory Manager

---

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-13032
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				620297
Order No.: 2543, GI	Client Sample Ref.:				BHC07
	Client Sample ID.:				W1
	Sample Type:				WATER
	Top Depth (m):				1.70
	Date Sampled:				09-May-2018
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.2
Ammonia (Free) as N	U	1220	mg/l	0.050	0.39
Sulphate	U	1220	mg/l	1.0	33
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	5.1
Boron (Dissolved)	U	1450	µg/l	20	270
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	9.7
Copper (Dissolved)	U	1450	µg/l	1.0	1.5
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.9
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	7.8
Zinc (Dissolved)	U	1450	µg/l	1.0	7.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 18-13032				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 620297				
Order No.: 2543, GI	Client Sample Ref.: BHC07				
	Client Sample ID.: W1				
	Sample Type: WATER				
	Top Depth (m): 1.70				
	Date Sampled: 09-May-2018				
Determinand	Accred.	SOP	Units	LOD	
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0

**Project: 2543, GI Lake Lothing, Lowestoft**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-13032	
Quotation No.: Q17-10179		Chemtest Sample ID.:		620297	
Order No.: 2543, GI		Client Sample Ref.:		BHC07	
		Client Sample ID.:		W1	
		Sample Type:		WATER	
		Top Depth (m):		1.70	
		Date Sampled:		09-May-2018	
Determinand	Accred.	SOP	Units	LOD	
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	5.2
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-13032
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				620297
Order No.: 2543, GI	Client Sample Ref.:				BHC07
	Client Sample ID.:				W1
	Sample Type:				WATER
	Top Depth (m):				1.70
	Date Sampled:				09-May-2018
Determinand	Accred.	SOP	Units	LOD	
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-13032
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				620297
Order No.: 2543, GI	Client Sample Ref.:				BHC07
	Client Sample ID.:				W1
	Sample Type:				WATER
	Top Depth (m):				1.70
	Date Sampled:				09-May-2018
Determinand	Accred.	SOP	Units	LOD	
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030



SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

---

<b>Report No.:</b>	18-13180-1		
<b>Initial Date of Issue:</b>	22-May-2018		
<b>Client</b>	Geosphere Environmental Ltd		
<b>Client Address:</b>	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
<b>Contact(s):</b>	Tom Powling		
<b>Project</b>	2543 GI Lake Loathing		
<b>Quotation No.:</b>	Q17-10179	<b>Date Received:</b>	11-May-2018
<b>Order No.:</b>		<b>Date Instructed:</b>	16-May-2018
<b>No. of Samples:</b>	2		
<b>Turnaround (Wkdays):</b>	5	<b>Results Due:</b>	22-May-2018
<b>Date Approved:</b>	22-May-2018		
<b>Approved By:</b>			
<b>Details:</b>	Glynn Harvey, Laboratory Manager		

---

**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-13180	18-13180	
Quotation No.: Q17-10179		Chemtest Sample ID.:		621138	621139	
Order No.:		Client Sample Ref.:		BHC27	BHC24	
		Sample Type:		WATER	WATER	
		Top Depth (m):		2.00	1.43	
		Date Sampled:		11-May-2018	11-May-2018	
Determinand	Accred.	SOP	Units	LOD		
pH	U	1010		N/A	8.6	12.4
Ammonia (Free) as N	U	1220	mg/l	0.050	0.15	1.1
Sulphate	U	1220	mg/l	1.0	120	38
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	17	2.9
Boron (Dissolved)	U	1450	µg/l	20	210	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	12	2.4
Copper (Dissolved)	U	1450	µg/l	1.0	3.1	37
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	3.3	77
Lead (Dissolved)	U	1450	µg/l	1.0	1.1	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	4.8	9.4
Zinc (Dissolved)	U	1450	µg/l	1.0	9.0	3.4
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	62	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	62	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	30	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	30	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	92	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10

**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-13180	18-13180
Quotation No.: Q17-10179		Chemtest Sample ID.:		621138	621139
Order No.:		Client Sample Ref.:		BHC27	BHC24
		Sample Type:		WATER	WATER
		Top Depth (m):		2.00	1.43
		Date Sampled:		11-May-2018	11-May-2018
Determinand	Accred.	SOP	Units	LOD	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10

**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-13180	18-13180
Quotation No.: Q17-10179		Chemtest Sample ID.:		621138	621139
Order No.:		Client Sample Ref.:		BHC27	BHC24
		Sample Type:		WATER	WATER
		Top Depth (m):		2.00	1.43
		Date Sampled:		11-May-2018	11-May-2018
Determinand	Accred.	SOP	Units	LOD	
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50

**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-13180	18-13180
Quotation No.: Q17-10179		Chemtest Sample ID.:		621138	621139
Order No.:		Client Sample Ref.:		BHC27	BHC24
		Sample Type:		WATER	WATER
		Top Depth (m):		2.00	1.43
		Date Sampled:		11-May-2018	11-May-2018
Determinand	Accred.	SOP	Units	LOD	
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50

**Project: 2543 GI Lake Loathing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		18-13180	18-13180		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		621138	621139		
Order No.:	Client Sample Ref.:		BHC27	BHC24		
	Sample Type:		WATER	WATER		
	Top Depth (m):		2.00	1.43		
	Date Sampled:		11-May-2018	11-May-2018		
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>		
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030



SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

## Report Information

### Key

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### Sample Deviation Codes

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### Sample Retention and Disposal

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-13183	
Quotation No.: Q17-10179		Chemtest Sample ID.:		621158	
Order No.:		Client Sample Ref.:		BHC09	
		Sample Type:		WATER	
		Top Depth (m):		4.84	
		Bottom Depth (m):		10.70	
		Date Sampled:		10-May-2018	
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	11.7
Ammonia (Free) as N	U	1220	mg/l	0.050	1.1
Sulphate	U	1220	mg/l	1.0	160
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	3.8
Boron (Dissolved)	U	1450	µg/l	20	34
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.082
Chromium (Dissolved)	U	1450	µg/l	1.0	19
Copper (Dissolved)	U	1450	µg/l	1.0	4.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	11
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	9.8
Zinc (Dissolved)	U	1450	µg/l	1.0	7.6
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10

**Project: 2543 GI Lake Loathing**

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-13183	
Quotation No.: Q17-10179		Chemtest Sample ID.:		621158	
Order No.:		Client Sample Ref.:		BHC09	
		Sample Type:		WATER	
		Top Depth (m):		4.84	
		Bottom Depth (m):		10.70	
		Date Sampled:		10-May-2018	
Determinand	Accred.	SOP	Units	LOD	
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0

**Project: 2543 GI Lake Loathing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>				18-13183
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>				621158
Order No.:	Client Sample Ref.:				BHC09
	Sample Type:				WATER
	Top Depth (m):				4.84
	Bottom Depth (m):				10.70
	Date Sampled:				10-May-2018
Determinand	Accred.	SOP	Units	LOD	
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50

**Project: 2543 GI Lake Loathing**

<b>Client:</b> Geosphere Environmental Ltd	<b>Chemtest Job No.:</b> 18-13183				
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b> 621158				
Order No.:	Client Sample Ref.: BHC09				
	Sample Type: WATER				
	Top Depth (m): 4.84				
	Bottom Depth (m): 10.70				
	Date Sampled: 10-May-2018				
Determinand	Accred.	SOP	Units	LOD	
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50

**Project: 2543 GI Lake Loathing**

<b>Client: Geosphere Environmental Ltd</b>	<b>Chemtest Job No.:</b>		18-13183		
Quotation No.: Q17-10179	<b>Chemtest Sample ID.:</b>		621158		
Order No.:	Client Sample Ref.:		BHC09		
	Sample Type:		WATER		
	Top Depth (m):		4.84		
	Bottom Depth (m):		10.70		
	Date Sampled:		10-May-2018		
Determinand	Accred.	SOP	Units	LOD	
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030



SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 18-13535-1

**Initial Date of Issue:** 23-May-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Tom Powling

**Project:** 2543 GI, Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179                      **Date Received:** 16-May-2018

**Order No.:**    **Date Instructed:** 16-May-2018

**No. of Samples:** 4

**Turnaround (Wkdays):** 5                      **Results Due:** 22-May-2018

**Date Approved:** 23-May-2018

**Approved By:**  


**Details:** Glynn Harvey, Laboratory Manager

---

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-13535	18-13535	18-13535	18-13535
Quotation No.: Q17-10179	Chemtest Sample ID.:				623008	623009	623010	623011
Order No.:	Client Sample Ref.:				BHC24(D)	BHC08	BHC01	BHC14
	Sample Type:				WATER	WATER	WATER	WATER
	Top Depth (m):				1.92	3.20	2.58	1.91
	Date Sampled:				14-May-2018	14-May-2018	14-May-2018	14-May-2018
Determinand	Accred.	SOP	Units	LOD				
pH	U	1010		N/A	12.3	9.9	13.2	12.8
Ammonia (Free) as N	U	1220	mg/l	0.050	0.57	0.55	0.31	0.66
Sulphate	U	1220	mg/l	1.0	28	100	350	8.7
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	6.7	4.2	2.4	2.4
Boron (Dissolved)	U	1450	µg/l	20	< 20	64	< 20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	0.088	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	16	22	160	7.4
Copper (Dissolved)	U	1450	µg/l	1.0	1.9	1.6	61	23
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	8.3	16	43	19
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	5.2	1.8
Selenium (Dissolved)	U	1450	µg/l	1.0	10	4.2	9.6	7.2
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0	2.7	17	6.4
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	160	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	63	46
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	63	46
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	63	46
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-13535	18-13535	18-13535	18-13535
Quotation No.: Q17-10179	Chemtest Sample ID.:				623008	623009	623010	623011
Order No.:	Client Sample Ref.:				BHC24(D)	BHC08	BHC01	BHC14
	Sample Type:				WATER	WATER	WATER	WATER
	Top Depth (m):				1.92	3.20	2.58	1.91
	Date Sampled:				14-May-2018	14-May-2018	14-May-2018	14-May-2018
Determinand	Accred.	SOP	Units	LOD				
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-13535	18-13535	18-13535	18-13535
Quotation No.: Q17-10179	Chemtest Sample ID.:				623008	623009	623010	623011
Order No.:	Client Sample Ref.:				BHC24(D)	BHC08	BHC01	BHC14
	Sample Type:				WATER	WATER	WATER	WATER
	Top Depth (m):				1.92	3.20	2.58	1.91
	Date Sampled:				14-May-2018	14-May-2018	14-May-2018	14-May-2018
Determinand	Accred.	SOP	Units	LOD				
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Client: Geosphere Environmental Ltd	Chemtest Job No.:				18-13535	18-13535	18-13535	18-13535
Quotation No.: Q17-10179	Chemtest Sample ID.:				623008	623009	623010	623011
Order No.:	Client Sample Ref.:				BHC24(D)	BHC08	BHC01	BHC14
	Sample Type:				WATER	WATER	WATER	WATER
	Top Depth (m):				1.92	3.20	2.58	1.91
	Date Sampled:				14-May-2018	14-May-2018	14-May-2018	14-May-2018
Determinand	Accred.	SOP	Units	LOD				
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Water

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-13535	18-13535	18-13535	18-13535
Quotation No.: Q17-10179		Chemtest Sample ID.:		623008	623009	623010	623011
Order No.:		Client Sample Ref.:		BHC24(D)	BHC08	BHC01	BHC14
		Sample Type:		WATER	WATER	WATER	WATER
		Top Depth (m):		1.92	3.20	2.58	1.91
		Date Sampled:		14-May-2018	14-May-2018	14-May-2018	14-May-2018
Determinand	Accred.	SOP	Units	LOD			
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	0.28 0.083



SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

## Report Information

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Final Report

---

**Report No.:** 18-15148-1

**Initial Date of Issue:** 04-Jun-2018

**Client:** Geosphere Environmental Ltd

**Client Address:** Brightwell Barns  
Ipswich Road  
Brightwell  
Suffolk  
IP10 0BJ

**Contact(s):** Lianne Fountain

**Project:** 2543, GI Lake Lothing, Lowestoft

**Quotation No.:** Q17-10179                      **Date Received:** 31-May-2018

**Order No.:** 2543, GI                              **Date Instructed:** 31-May-2018

**No. of Samples:** 2

**Turnaround (Wkdays):** 3                      **Results Due:** 04-Jun-2018

**Date Approved:** 04-Jun-2018

**Approved By:**  


**Details:** Martin Dyer, Laboratory Manager

---

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-15148	18-15148	
Quotation No.: Q17-10179		Chemtest Sample ID.:		630538	630539	
Order No.: 2543, GI		Client Sample Ref.:		BHC02	BHC07	
		Client Sample ID.:		W2	W2	
		Sample Type:		WATER	WATER	
		Top Depth (m):		1.10	1.15	
		Bottom Depth (m):		1.40	1.40	
		Date Sampled:		30-May-2018	30-May-2018	
Determinand	Accred.	SOP	Units	LOD		
pH	U	1010		N/A	7.7	8.3
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050	0.32
Sulphate	U	1220	mg/l	1.0	110	27
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	3.4	7.2
Boron (Dissolved)	U	1450	µg/l	20	140	250
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.098	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	2.7	3.1
Copper (Dissolved)	U	1450	µg/l	1.0	3.1	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	2.4	2.7
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	3.9	2.8
Zinc (Dissolved)	U	1450	µg/l	1.0	11	1.9
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-15148	18-15148
Quotation No.: Q17-10179		Chemtest Sample ID.:		630538	630539
Order No.: 2543, GI		Client Sample Ref.:		BHC02	BHC07
		Client Sample ID.:		W2	W2
		Sample Type:		WATER	WATER
		Top Depth (m):		1.10	1.15
		Bottom Depth (m):		1.40	1.40
		Date Sampled:		30-May-2018	30-May-2018
Determinand	Accred.	SOP	Units	LOD	
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-15148	18-15148
Quotation No.: Q17-10179		Chemtest Sample ID.:		630538	630539
Order No.: 2543, GI		Client Sample Ref.:		BHC02	BHC07
		Client Sample ID.:		W2	W2
		Sample Type:		WATER	WATER
		Top Depth (m):		1.10	1.15
		Bottom Depth (m):		1.40	1.40
		Date Sampled:		30-May-2018	30-May-2018
Determinand	Accred.	SOP	Units	LOD	
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-15148	18-15148
Quotation No.: Q17-10179		Chemtest Sample ID.:		630538	630539
Order No.: 2543, GI		Client Sample Ref.:		BHC02	BHC07
		Client Sample ID.:		W2	W2
		Sample Type:		WATER	WATER
		Top Depth (m):		1.10	1.15
		Bottom Depth (m):		1.40	1.40
		Date Sampled:		30-May-2018	30-May-2018
Determinand	Accred.	SOP	Units	LOD	
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50

Client: Geosphere Environmental Ltd		Chemtest Job No.:		18-15148	18-15148	
Quotation No.: Q17-10179		Chemtest Sample ID.:		630538	630539	
Order No.: 2543, GI		Client Sample Ref.:		BHC02	BHC07	
		Client Sample ID.:		W2	W2	
		Sample Type:		WATER	WATER	
		Top Depth (m):		1.10	1.15	
		Bottom Depth (m):		1.40	1.40	
		Date Sampled:		30-May-2018	30-May-2018	
Determinand	Accred.	SOP	Units	LOD		
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030



SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

## **Report Information**

### **Key**

---

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Annex D

MARINE SAMPLING FACTUAL

---

INFORMATION

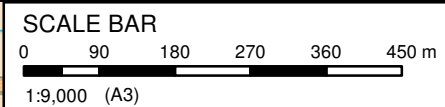
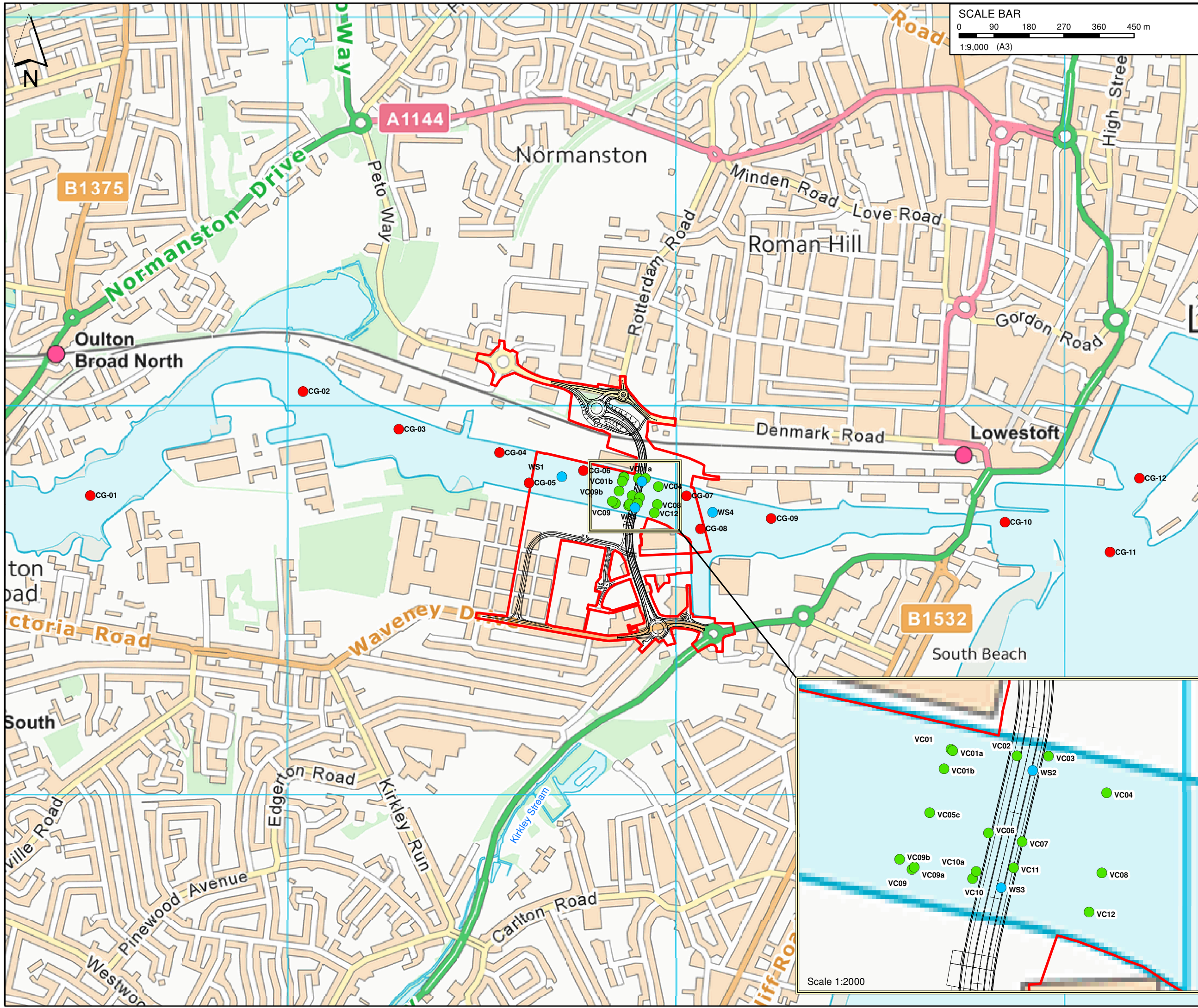




# Annex D.1

SAMPLING LOCATIONS





- KEY**
- The Scheme
  - Order Limits
  - Marine Sampling Locations**
  - Sediment Grab Sample Location
  - Vibrocore Sample Location
  - Surface Water Sample Location

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO.  
 © Crown copyright and database rights 2017. All rights reserved.  
 Ordnance Survey licence number 100023395  
 Contains OS data © Crown copyright and database rights 2017.

P01.01	IW	NB	HR	12/02/2018
ORIGINAL ISSUE				
REVISION	DRAWN	CHECKED	APPROVED	DATE
DESCRIPTION				



**PROJECT TITLE**  
 Lake Lothing  
**THIRD CROSSING**

**DRAWING TITLE**  
 Marine Sampling Locations

**DRAWING STATUS**  
 Ready for Final Review

DRAWN	CHECKED	APPROVED	AUTHORISED	SUITABILITY
IW	NB	HR	MD	S4
SCALE @ A3 SIZE		DATE	REVISION	
1:9,000		21/05/2018	P01.01	

**DRAWING NUMBER**

Project	Originator	Volume
1069948-WSP-EGN-LL-C19-SK-LE-000X		
Location	Type	Role
		Number

Drawn by: DF	<b>OFFSHORE CORE LOG</b>	
Date: 16/05/2018		
Checked by: DH		

PROJECT DETAILS	
Contract No: 2016-259	Project Title:
Vessel: MV FlatHolm	<b>WSP Lake Lothing Lowestoft VC &amp; Grab Sampling</b>
Client: WSP (UK) Ltd	
Area: Lowestoft Harbour	

TEST LOCATION DETAILS			
Coordinate Ref System: British Grid (OSGB36)	Penetration(m): 1.65	Core Number	
Easting (m)/Northing (m): 653861.3 E - N 292806.9	Recovery(m): 1.54	<b>VC01B</b>	
Water Depth(m): 3.1	KP Distance (m):		
Sampling Date: 20/04/18	Fix Number: fix 21		
Vibration Time on Seabed: 0 mins	Touchdown (local-time): 10:50:31UTC		
Comments: Spiking amps			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey SILT	XXXXXX XXXXXX XXXXXX XXXXXX	0.70				
Light brown fine to coarse SAND	XXXXXX XXXXXX XXXXXX XXXXXX	1.54	0.80-1.20m			
		1.54	1.24-1.54m			


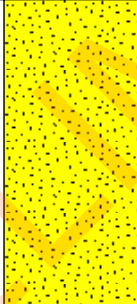



Drawn by: DF	<b>OFFSHORE CORE LOG</b>	
Date: 19/05/2018		
Checked by: DH		

PROJECT DETAILS	
Contract No: 2016-259	Project Title:
Vessel: MV FlatHolm	<b>WSP Lake Lothing Lowestoft VC &amp; Grab Sampling</b>
Client: WSP (UK) Ltd	
Area: Lowestoft Harbour	

TEST LOCATION DETAILS			
Coordinate Ref System: British Grid (OSGB36)	Penetration(m): 4.20	Core Number	
Easting (m)/Northing (m): 653903.0 E - N 292814.4	Recovery(m): 3.63	<b>VC02</b>	
Water Depth(m): 3.2	KP Distance (m):		
Sampling Date: 20/04/18	Fix Number: fix 25		
Vibration Time on Seabed: 2 mins	Touchdown (local-time): 14:44:47UTC		

Comments: Spiking amps, clay in base

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Very soft to soft SILT		1.50	0.80-1.20m			
Light brown fine to coarse SAND		2.70	1.80-2.20m			
Stiff to very stiff silty CLAY		3.63	2.80-3.20m			
			3.20-3.63m			



PROJECT DETAILS	
Contract No: 2016-259	Project Title:
Vessel: MV FlatHolm	<b>WSP Lake Lothing Lowestoft VC &amp; Grab Sampling</b>
Client: WSP (UK) Ltd	
Area: Lowestoft Harbour	

TEST LOCATION DETAILS			
Coordinate Ref System: British Grid (OSGB36)	Penetration(m): 4.55	Recovery(m): 4.20	Core Number
Easting (m)/Northing (m): 653954.3 E - N 292793.2	KP Distance (m):	<b>VC04</b>	
Water Depth(m): 3.0	Fix Number: fix 15		
Sampling Date: 19/04/18	Touchdown (local-time): 14:55:15UTC		
Vibration Time on Seabed: 1 mins			

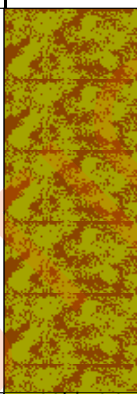

Comments: Flatline penetration

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
SILT - sandy silt	XXXXXX					
Light grey slightly silty fine to medium SAND coursing down to medium to coarse SAND	XXXXXX	0.90	0.80-1.20m			
			1.80-2.20m			
		3.00	2.80-3.20m			
			3.60-4.00m			
Light grey slightly clayey SILT	XXXXXX	4.00				

Drawn by: DF	<b>OFFSHORE CORE LOG</b>	
Date: 16/05/2018		
Checked by: DH		

PROJECT DETAILS	
Contract No: 2016-259	Project Title:
Vessel: MV FlatHolm	<b>WSP Lake Lothing Lowestoft VC &amp; Grab Sampling</b>
Client: WSP (UK) Ltd	
Area: Lowestoft Harbour	

TEST LOCATION DETAILS			
Coordinate Ref System: British Grid (OSGB36)	Penetration(m): 3.70	Core Number	
Easting (m)/Northing (m): 653853.1 E - N 292781.8	Recovery(m): 2.93	<b>VC05C</b>	
Water Depth(m): 4.4	KP Distance (m):		
Sampling Date: 19/04/18	Fix Number: fix 14		
Vibration Time on Seabed: 2 mins	Touchdown (local-time): 13:50:52UTC		
Comments: Loss of position			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Black soft clayey SILT						
			0.80-1.20m			
Grey very silty fine SAND. Gravelly at base		1.50				
			1.80-2.20m			
Very dense light grey SILT		2.15				
			2.53-2.93m			
Brownish grey silty fine to medium SAND		2.80				
		2.93				
<b>Currently to max depth 5.50 m</b>						



Drawn by: DF	<b>OFFSHORE CORE LOG</b>	
Date: 19/05/2018		
Checked by: DH		

PROJECT DETAILS	
Contract No: 2016-259	Project Title:
Vessel: MV FlatHolm	<b>WSP Lake Lothing Lowestoft VC &amp; Grab Sampling</b>
Client: WSP (UK) Ltd	
Area: Lowestoft Harbour	

TEST LOCATION DETAILS			
Coordinate Ref System: British Grid (OSGB36)	Penetration(m): 2.50	Core Number	
Easting (m)/Northing (m): 653905.9 E - N 292765.3	Recovery(m): 2.00	<b>VC07</b>	
Water Depth(m): 1.4	KP Distance (m):		
Sampling Date: 20/04/18	Fix Number: fix 27		
Vibration Time on Seabed: 2 mins	Touchdown (local-time): 16:42:05UTC		

Comments: Loss of position
----------------------------

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey sandy SILT	[Patterned]					
Light brown slightly silty fine to coarse SAND with occasional gravel	[Patterned]	0.40				
			0.80-1.20m			
			1.60-2.00m			
		2.00				

Drawn by: DF	<b>OFFSHORE CORE LOG</b>	
Date: 19/05/2018		
Checked by: DH		

PROJECT DETAILS	
Contract No: 2016-259	Project Title:
Vessel: MV FlatHolm	<b>WSP Lake Lothing Lowestoft VC &amp; Grab Sampling</b>
Client: WSP (UK) Ltd	
Area: Lowestoft Harbour	

TEST LOCATION DETAILS			
Coordinate Ref System: British Grid (OSGB36)	Penetration(m): 2.05	Core Number	
Easting (m)/Northing (m): 653951.6 E - N 292747.4	Recovery(m): 1.45	<b>VC08</b>	
Water Depth(m): 3.6	KP Distance (m):		
Sampling Date: 20/04/18	Fix Number: fix 26		
Vibration Time on Seabed: 1 mins	Touchdown (local-time): 16:04:34UTC		
Comments: Loss of position			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey SILT	XXXXXX XXXXXX XXXXXX XXXXXX	0.60				
Light brown slightly silty fine to medium SAND	XXXXXX XXXXXX XXXXXX XXXXXX	1.45	0.60-1.00m			
			1.00-1.45m			

Currently to max depth 5.50 m

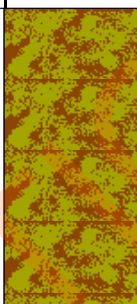

OPS: Offshore Core Logs may differ from final laboratory standard core logs and to be referred to as a guide only

© CMS-Geotech—Uncontrolled when Copied

Drawn by: DF	<b>OFFSHORE CORE LOG</b>	
Date: 16/05/2018		
Checked by: DH		

PROJECT DETAILS	
Contract No: 2016-259	Project Title:
Vessel: MV FlatHolm	<b>WSP Lake Lothing Lowestoft VC &amp; Grab Sampling</b>
Client: WSP (UK) Ltd	
Area: Lowestoft Harbour	

TEST LOCATION DETAILS			
Coordinate Ref System: British Grid (OSGB36)	Penetration(m): 2.05	Core Number	
Easting (m)/Northing (m): 653835.9 E - N 292755.2	Recovery(m): 1.66	<b>VC09B</b>	
Water Depth(m): 4.4	KP Distance (m):		
Sampling Date: 19/04/18	Fix Number: fix 13		
Vibration Time on Seabed: 1 mins	Touchdown (local-time): 12:48:45UTC		
Comments: Loss of position			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Greyish brown slightly sandy very clayey SILT						
		1.20	0.80-1.20m			
Light brown clayey silty SAND						
		1.66	1.26-1.66m			
<b>Currently to max depth 5.50 m</b>						



Drawn by: DF  
Date: 19/05/2018  
Checked by: DH

## OFFSHORE CORE LOG



### PROJECT DETAILS

Contract No: 2016-259	Project Title:  <b>WSP Lake Lothing Lowestoft VC &amp; Grab Sampling</b>
Vessel: MV FlatHolm	
Client: WSP (UK) Ltd	
Area: Lowestoft Harbour	

### TEST LOCATION DETAILS

Coordinate Ref System: British Grid (OSGB36)	Penetration(m): 3.10	Core Number
Easting (m)/Northing (m): 653879.7 E - N 292748.1	Recovery(m): 2.85	<b>VC10A</b>
Water Depth(m): 3.8	KP Distance (m):	
Sampling Date: 20/04/18	Fix Number: fix 18	
Vibration Time on Seabed: 1 mins	Touchdown (local-time): 08:24:58UTC	
Comments: Flatline penetration		

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey SILT		1.50	0.80-1.20m			
Light brown fine to medium SAND		2.85	1.80-2.20m			
			2.45-2.85m			

PROJECT DETAILS	
Contract No: 2016-259	Project Title:  <b>WSP Lake Lothing Lowestoft VC &amp; Grab Sampling</b>
Vessel: MV FlatHolm	
Client: WSP (UK) Ltd	
Area: Lowestoft Harbour	

TEST LOCATION DETAILS			
Coordinate Ref System: British Grid (OSGB36)	Penetration(m): 3.00	<b>VC11</b>	
Easting (m)/Northing (m): 653901.1 E - N 292750.3	Recovery(m): 2.50		
Water Depth(m):	KP Distance (m):		
Sampling Date: 20/04/18	Fix Number: fix 22		
Vibration Time on Seabed: 2 mins	Touchdown (local-time): 11:26:43UTC		

Comments: Penetration flatline

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey SILT	X X X X X X X X					
Very gravelly SAND. Gravel is fine to coarse	X X X X X X X X	1.10	0.80-1.20m			
Light brown fine to medium SAND	X X X X X X X X	1.40				
	X X X X X X X X		1.80-2.20m			
	X X X X X X X X	2.50	2.20-2.50m			
<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.3; font-size: 8em; pointer-events: none;">             CAUTION: PRELIMINARY FIELD NOTES           </div>						

PROJECT DETAILS		
Contract No:	2016-259	Project Title:
Vessel:	MV FlatHolm	<b>WSP Lake Lothing Lowestoft VC &amp; Grab Sampling</b>
Client:	WSP (UK) Ltd	
Area:	Lowestoft Harbour	

TEST LOCATION DETAILS			
Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	3.75
Easting (m)/Northing (m):	653944.2 E - N 292725.1	Recovery(m):	3.30
Water Depth(m):		KP Distance (m):	
Sampling Date:	20/04/18	Fix Number:	fix 23
Vibration Time on Seabed:	1 mins	Touchdown (local-time):	12:28:55UTC
Comments:	Loss of position		

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey slightly sandy SILT						
			0.80-1.20m			
Light brown slightly silty fine to medium SAND		1.30				
			1.80-2.20m			
			2.80-3.30m			
		3.30				

# Annex D.2

CHEMICAL TEST DATA





Unit 7-8 Hawarden Business Park  
Manor Road (off Manor Lane)  
Hawarden  
Deeside  
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

WSP UK Limited  
3rd Floor  
Station House  
Mercury Court  
Titheburn Street  
Liverpool  
L2 2QP

**Attention:** Neil Balderstone

## CERTIFICATE OF ANALYSIS

**Date:** 02 May 2018  
**Customer:** H\_MOUCH\_LIV  
**Sample Delivery Group (SDG):** 180412-80  
**Your Reference:** 62240712  
**Location:** Lowestoft  
**Report No:** 454516

**This report has been revised and directly supersedes 452622 in its entirety.**

We received 12 samples on Thursday April 12, 2018 and 12 of these samples were scheduled for analysis which was completed on Wednesday May 02, 2018. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Approved By:

**Sonia McWhan**

Operations Manager





# CERTIFICATE OF ANALYSIS

Validated

SDG: 180412-80  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 454516  
Superseded Report: 452622

## Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
17353781	CG 01		0.00 - 0.16	09/04/2018
17353782	CG 02		0.00 - 0.16	09/04/2018
17353791	CG 03		0.00 - 0.16	09/04/2018
17353783	CG 04		0.00 - 0.16	09/04/2018
17353790	CG 05		0.00 - 0.16	09/04/2018
17353780	CG 06		0.00 - 0.16	09/04/2018
17353788	CG 08		0.00 - 0.16	09/04/2018
17353792	CG 09		0.00 - 0.16	09/04/2018
17353786	CG 10		0.00 - 0.16	10/04/2018
17353784	CG 11		0.00 - 0.16	10/04/2018
17353785	CG 12		0.00 - 0.16	10/04/2018
17353787	CG 07B		0.00 - 0.16	09/04/2018

### Maximum Sample/Coolbox Temperature (°C) :

#### ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

### 4.4

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180412-80  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454516  
**Superseded Report:** 452622

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	X Test	No Determination Possible	17353781	17353782	17353791	17353783	17353790	17353780	17353788	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
<p>Sample Types -</p> <ul style="list-style-type: none"> <li>S - Soil/Solid</li> <li>UNS - Unspecified Solid</li> <li>GW - Ground Water</li> <li>SW - Surface Water</li> <li>LE - Land Leachate</li> <li>PL - Prepared Leachate</li> <li>PR - Process Water</li> <li>SA - Saline Water</li> <li>TE - Trade Effluent</li> <li>TS - Treated Sewage</li> <li>US - Untreated Sewage</li> <li>RE - Recreational Water</li> <li>DW - Drinking Water Non-regulatory</li> <li>UNL - Unspecified Liquid</li> <li>SL - Sludge</li> <li>G - Gas</li> <li>OTH - Other</li> </ul>												
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 12	X	X	X	X	X	X				
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 12	X	X	X	X	X	X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 12		X		X		X		X		X
Metals in solid samples by OES	All	NDPs: 0 Tests: 12	X	X	X	X	X	X		X		X
OC, OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 12	X	X	X	X	X	X		X		X
Organotins on soils*	All	NDPs: 0 Tests: 12	X	X	X	X	X	X		X		X
PAH by GCMS	All	NDPs: 0 Tests: 12	X	X	X	X	X	X		X		X
Passing Through >63µm sieve	All	NDPs: 0 Tests: 12	X	X	X	X	X	X		X		X
PCBs by GCMS	All	NDPs: 0 Tests: 12	X	X	X	X	X	X		X		X
Sample description	All	NDPs: 0 Tests: 11	X	X	X	X	X	X		X		X
TPH CWG GC (S)	All	NDPs: 0 Tests: 12	X	X	X	X	X	X		X		X

17353787	CG 07B		0.00 - 0.16	60g VOC (ALE215)	S																				
				250g Amber Jar (ALE210)	S	X																			
				1kg TUB	S	X																			
17353785	CG 12		0.00 - 0.16	60g VOC (ALE215)	S					X															
				250g Amber Jar (ALE210)	S	X																			
				1kg TUB	S	X																			
17353784	CG 11		0.00 - 0.16	60g VOC (ALE215)	S					X															
				250g Amber Jar (ALE210)	S	X																			
				1kg TUB	S	X																			
17353786	CG 10		0.00 - 0.16	60g VOC (ALE215)	S					X															
				250g Amber Jar (ALE210)	S	X																			
				1kg TUB	S	X																			
17353792	CG 09		0.00 - 0.16	60g VOC (ALE215)	S					X															
				250g Amber Jar (ALE210)	S	X																			
				1kg TUB	S	X																			
17353788	CG 08		0.00 - 0.16	60g VOC (ALE215)	S					X															
				250g Amber Jar (ALE210)	S	X																			
				1kg TUB	S	X																			





# CERTIFICATE OF ANALYSIS

Validated

SDG: 180412-80  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 454516  
Superseded Report: 452622

## Sample Descriptions

### Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
17353781	CG 01	0.00 - 0.16	Dark Brown	Silt Loam	None	None
17353782	CG 02	0.00 - 0.16	Black	Silt Loam	None	None
17353791	CG 03	0.00 - 0.16	Grey	N/A	None	None
17353783	CG 04	0.00 - 0.16	Dark Brown	Sandy Silt Loam	Stones	Vegetation
17353790	CG 05	0.00 - 0.16	Dark Brown	Sandy Silt Loam	Stones	Vegetation
17353780	CG 06	0.00 - 0.16	Dark Brown	Silt Loam	Stones	None
17353788	CG 08	0.00 - 0.16	Dark Brown	Silt Loam	None	None
17353792	CG 09	0.00 - 0.16	Dark Brown	Sand	None	None
17353786	CG 10	0.00 - 0.16	Dark Brown	N/A	Vegetation	None
17353784	CG 11	0.00 - 0.16	Dark Brown	Sandy Silt Loam	Vegetation	Stones
17353785	CG 12	0.00 - 0.16	Dark Brown	Silty Clay Loam	Stones	Vegetation
17353787	CG 07B	0.00 - 0.16	Dark Brown	Silt Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180412-80  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454516  
**Superseded Report:** 452622

Results Legend		Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018
diss.filt	Dissolved / filtered sample.		13:00:00	15:18:00	15:30:00	15:43:00	15:55:00	16:08:00
tot.unfilt	Total / unfiltered sample.		12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
**	Subcontracted test.		180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17353781	17353782	17353791	17353783	17353790	17353780
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	63	47	58	47	57	61
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	3.16 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	3.32 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181	19.1 M	18.4 M	19.8	19.8 M	21.2 M	24.2 M
Boron	<0.7 mg/kg	TM181	40.3 #	34.6 #	41.8	38.4 #	41.8 #	44.8 #
Cadmium	<0.02 mg/kg	TM181	0.392 M	<0.02 M	0.297	0.313 M	<0.02 M	0.255 M
Chromium	<0.9 mg/kg	TM181	26.2 M	25.8 M	27.2	24.3 M	23.4 M	27.3 M
Copper	<1.4 mg/kg	TM181	131 M	63.4 M	35	23.6 M	21.3 M	21.3 M
Lead	<0.7 mg/kg	TM181	65.8 M	47.8 M	37.4	33.2 M	32.6 M	36.5 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181	24.7 M	23.6 M	25.8	24.1 M	24 M	27.8 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181	212 M	161 M	124	100 M	101 M	108 M



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180412-80  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454516  
**Superseded Report:** 452622

Results Legend		Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		09/04/2018	09/04/2018	10/04/2018	10/04/2018	10/04/2018	09/04/2018
diss.filt	Dissolved / filtered sample.		16:21:00	16:50:00	14:10:00	14:20:00	14:33:00	16:39:00
tot.unfilt	Total / unfiltered sample.		12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
**	Subcontracted test.		180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17353788	17353792	17353786	17353784	17353785	17353787
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	52	55	53	36	48	47
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181	18.6 M	20.6 M	18.7 M	17.5 M	19.5 M	19.6 M
Boron	<0.7 mg/kg	TM181	27.2 #	45 #	44.5 #	32 #	41.7 #	38.8 #
Cadmium	<0.02 mg/kg	TM181	0.311 M	0.258 M	0.236 M	0.294 M	<0.02 M	0.286 M
Chromium	<0.9 mg/kg	TM181	24.7 M	25.4 M	20.3 M	14.8 M	21.4 M	22.5 M
Copper	<1.4 mg/kg	TM181	21.7 M	18.6 M	13.9 M	12.7 M	14.8 M	20.7 M
Lead	<0.7 mg/kg	TM181	37.2 M	31.4 M	25.1 M	21.4 M	29.9 M	32.3 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181	25.3 M	25.4 M	20.7 M	16.5 M	22.3 M	23.7 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181	108 M	94 M	72.5 M	60.4 M	85.1 M	93.9 M



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180412-80  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454516  
**Superseded Report:** 452622

## OC, OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018
diss.filt	Dissolved / filtered sample.		13:00:00	15:18:00	15:30:00	15:43:00	15:55:00	16:08:00
tot.unfilt	Total / unfiltered sample.		12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
*	Subcontracted test.		180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17353781	17353782	17353791	17353783	17353790	17353780
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Tecnazene	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Hexachlorobenzene	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Trifluralin	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Phorate	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Quintozene (PCNB)	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Triallate	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Disulfoton	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Heptachlor	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Aldrin	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Chlorothalonil	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Telodrin	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Isodrin	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Heptachlor epoxide	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Triadimefon	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Pendimethalin	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
o,p-DDE	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Endosulphan I	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Trans-chlordane	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
cis-Chlordane	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
p,p-DDE	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Dieldrin	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
o,p'-DDD (TDE)	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Endrin	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
o,p-DDT	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
p,p-TDE (DDD)	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Endosulphan II	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
p,p-DDT	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
o,p-Methoxychlor	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
p,p-Methoxychlor	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500
Endosulphan sulphate	<50 µg/kg	TM073	<500	<500	<500	<500	<500	<500





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180412-80  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454516  
**Superseded Report:** 452622

## OC, OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units	Method	Depth (m)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Tecnazene	<50 µg/kg	TM073	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
Hexachlorobenzene	<50 µg/kg	TM073	09/04/2018	09/04/2018	10/04/2018	10/04/2018	10/04/2018	09/04/2018
Trifluralin	<50 µg/kg	TM073	16:21:00	16:50:00	14:10:00	14:20:00	14:33:00	16:39:00
Phorate	<50 µg/kg	TM073	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
Quintozene (PCNB)	<50 µg/kg	TM073	17353788	17353792	17353786	17353784	17353785	17353787
Triallate	<50 µg/kg	TM073						
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073						
Disulfoton	<50 µg/kg	TM073						
Heptachlor	<50 µg/kg	TM073						
Aldrin	<50 µg/kg	TM073						
Chlorothalonil	<50 µg/kg	TM073						
Telodrin	<50 µg/kg	TM073						
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073						
Isodrin	<50 µg/kg	TM073						
Heptachlor epoxide	<50 µg/kg	TM073						
Triadimefon	<50 µg/kg	TM073						
Pendimethalin	<50 µg/kg	TM073						
o,p-DDE	<50 µg/kg	TM073						
Endosulphan I	<50 µg/kg	TM073						
Trans-chlordane	<50 µg/kg	TM073						
cis-Chlordane	<50 µg/kg	TM073						
p,p-DDE	<50 µg/kg	TM073						
Dieldrin	<50 µg/kg	TM073						
o,p'-DDD (TDE)	<50 µg/kg	TM073						
Endrin	<50 µg/kg	TM073						
o,p-DDT	<50 µg/kg	TM073						
p,p-TDE (DDD)	<50 µg/kg	TM073						
Endosulphan II	<50 µg/kg	TM073						
p,p-DDT	<50 µg/kg	TM073						
o,p-Methoxychlor	<50 µg/kg	TM073						
p,p-Methoxychlor	<50 µg/kg	TM073						
Endosulphan sulphate	<50 µg/kg	TM073						



CERTIFICATE OF ANALYSIS

Validated

SDG: 180412-80
Location: Lowestoft

Client Reference: 62240712
Order Number: 62240712

Report Number: 454516
Superseded Report: 452622

OC, OP Pesticides and Triazine Herb

Table with columns for Results Legend, Customer Sample Ref., and various sample analysis parameters (CG 08 to CG 07B). Includes rows for Permethrin I and II with LOD/Units and Method.



### CERTIFICATE OF ANALYSIS

Validated

<b>SDG:</b> 180412-80	<b>Client Reference:</b> 62240712	<b>Report Number:</b> 454516	
<b>Location:</b> Lowestoft	<b>Order Number:</b> 62240712	<b>Superseded Report:</b> 452622	

#### Organotins on soils\*

Results Legend		Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018
diss.filt	Aqueous / filtered sample.		13:00:00	15:18:00	15:30:00	15:43:00	15:55:00	16:08:00	16:08:00
tot.unfilt	Total / unfiltered sample.		12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
*	Subcontracted test.		180412-80	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17353781	17353782	17353791	17353783	17353790	17353780	17353780
(F)	Trigger breach confirmed								
1-5&*\$@	Sample deviation (see appendix)								
Component	LOD/Units		Method						
Dibutyl Tin*	mg/kg	SUB	<0.05	<0.04	<0.05	<0.04	<0.04	<0.05	
Tributyl Tin*	mg/kg	SUB	0.07	0.07	<0.05	<0.04	<0.04	<0.05	
Triphenyl Tin*	mg/kg	SUB	<0.14	<0.1	<0.12	<0.11	<0.11	<0.12	
Tetrabutyl Tin*	mg/kg	SUB	<0.05	<0.04	<0.05	<0.04	<0.04	<0.05	
Monobutyl Tin*	mg/kg	SUB	<0.27	<0.21	<0.23	<0.22	<0.22	<0.23	
Monophenyl Tin*	mg/kg	SUB	<0.05	<0.04	<0.05	<0.04	<0.04	<0.05	
Diphenyl Tin*	mg/kg	SUB	<0.05	<0.04	<0.05	<0.04	<0.04	<0.05	





# CERTIFICATE OF ANALYSIS

Validated

SDG: 180412-80  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 454516  
Superseded Report: 452622

## Organotins on soils\*

Results Legend		Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-5&*S@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Dibutyl Tin*	mg/kg	SUB	<0.04	<0.05	<0.04	<0.02	<0.04	<0.04
Tributyl Tin*	mg/kg	SUB	<0.04	<0.05	<0.04	<0.02	<0.04	<0.04
Triphenyl Tin*	mg/kg	SUB	<0.1	<0.11	<0.1	<0.05	<0.11	<0.1
Tetrabutyl Tin*	mg/kg	SUB	<0.04	<0.05	<0.04	<0.02	<0.04	<0.04
Monobutyl Tin*	mg/kg	SUB	<0.2	<0.23	<0.21	<0.15	<0.22	<0.2
Monophenyl Tin*	mg/kg	SUB	<0.04	<0.05	<0.04	<0.02	<0.04	<0.04
Diphenyl Tin*	mg/kg	SUB	<0.04	<0.05	<0.04	<0.02	<0.04	<0.04



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180412-80  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454516  
**Superseded Report:** 452622

**PAH by GCMS**

Results Legend		Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018
diss.filt	Dissolved / filtered sample.		13:00:00	15:18:00	15:30:00	15:43:00	15:55:00	16:08:00
tot.unfilt	Total / unfiltered sample.		12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
*	Subcontracted test.		180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17353781	17353782	17353791	17353783	17353790	17353780
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Naphthalene-d8 % recovery**	%	TM218	100	104	73.8	91.7	99	104
Acenaphthene-d10 % recovery**	%	TM218	90.7	96.2	70.5	91.5	98.5	95.3
Phenanthrene-d10 % recovery**	%	TM218	92.4	96	70.3	90.9	98	93.3
Chrysene-d12 % recovery**	%	TM218	108	101	126	78.4	83.4	87.6
Perylene-d12 % recovery**	%	TM218	87.6	86.2	89.6	76.4	84	75.3
Naphthalene	<9 µg/kg	TM218	188	398	291	37.3	24.7	46.9
			M	M	#	M	M	M
Acenaphthylene	<12 µg/kg	TM218	<60	71.2	<60	<12	<12	<12
			M	M	#	M	M	M
Acenaphthene	<8 µg/kg	TM218	<40	319	430	45.7	<8	<8
			M	M	#	M	M	M
Fluorene	<10 µg/kg	TM218	<50	237	170	23	<10	<10
			M	M	#	M	M	M
Phenanthrene	<15 µg/kg	TM218	256	447	355	82.4	51.7	90.5
			M	M	#	M	M	M
Anthracene	<16 µg/kg	TM218	<80	342	<80	32.7	<16	<16
			M	M	#	M	M	M
Fluoranthene	<17 µg/kg	TM218	541	1230	1040	203	107	131
			M	M	#	M	M	M
Pyrene	<15 µg/kg	TM218	680	5590	1510	208	92.4	110
			M	M	#	M	M	M
Benz(a)anthracene	<14 µg/kg	TM218	232	348	303	70.7	34.1	47
			M	M	#	M	M	M
Chrysene	<10 µg/kg	TM218	193	260	261	61.9	34.7	52.9
			M	M	#	M	M	M
Benzo(b)fluoranthene	<15 µg/kg	TM218	430	1120	335	95.8	52.7	92.5
			M	M	#	M	M	M
Benzo(k)fluoranthene	<14 µg/kg	TM218	222	408	213	35.5	<14	<14
			M	M	#	M	M	M
Benzo(a)pyrene	<15 µg/kg	TM218	229	643	244	60.2	<15	38.8
			M	M	#	M	M	M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<90	224	<90	34.8	<18	<18
			M	M	#	M	M	M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<115	<46	<115	<23	<23	<23
			M	M	#	M	M	M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<120	268	<120	48.8	<24	<24
			M	M	#	M	M	M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	2970	11900	5150	1040	397	609



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180412-80  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 454516  
Superseded Report: 452622

## PAH by GCMS

Results Legend		Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		09/04/2018	09/04/2018	10/04/2018	10/04/2018	10/04/2018	09/04/2018
diss.filt	Dissolved / filtered sample.		16:21:00	16:50:00	14:10:00	14:20:00	14:33:00	16:39:00
tot.unfilt	Total / unfiltered sample.		12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
*	Subcontracted test.		180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17353788	17353792	17353786	17353784	17353785	17353787
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Naphthalene-d8 % recovery**	%	TM218	93.5	94.2	100	101	88.6	89.1
Acenaphthene-d10 % recovery**	%	TM218	85.8	94.1	93.8	94.1	87.3	89.5
Phenanthrene-d10 % recovery**	%	TM218	84.2	92.9	92	91.8	85.3	86.8
Chrysene-d12 % recovery**	%	TM218	80.7	74	87.8	88.8	81	80
Perylene-d12 % recovery**	%	TM218	70.6	76.2	77.3	80.7	87.9	86.4
Naphthalene	<9 µg/kg	TM218	55.6	31.7	27.6	17.2	24.3	<9
			M	M	#	M	M	M
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	<12	<12	<12
			M	M	#	M	M	M
Acenaphthene	<8 µg/kg	TM218	27.1	<8	<8	<8	<8	<8
			M	M	#	M	M	M
Fluorene	<10 µg/kg	TM218	33.1	<10	<10	<10	<10	<10
			M	M	#	M	M	M
Phenanthrene	<15 µg/kg	TM218	124	64.7	85.4	67.9	63.5	34.9
			M	M	#	M	M	M
Anthracene	<16 µg/kg	TM218	34.5	<16	<16	<16	<16	<16
			M	M	#	M	M	M
Fluoranthene	<17 µg/kg	TM218	205	79.9	129	151	99.3	51.7
			M	M	#	M	M	M
Pyrene	<15 µg/kg	TM218	172	67.7	107	120	82.6	44
			M	M	#	M	M	M
Benz(a)anthracene	<14 µg/kg	TM218	71.4	<14	60	79.1	45.1	<14
			M	M	#	M	M	M
Chrysene	<10 µg/kg	TM218	74.2	30.4	61.6	80.8	42.5	20.5
			M	M	#	M	M	M
Benzo(b)fluoranthene	<15 µg/kg	TM218	131	47.4	93.2	93.7	95	30.6
			M	M	#	M	M	M
Benzo(k)fluoranthene	<14 µg/kg	TM218	50.2	<14	30.8	51.5	29.3	<14
			M	M	#	M	M	M
Benzo(a)pyrene	<15 µg/kg	TM218	65.1	<15	50.7	64.8	49.9	<15
			M	M	#	M	M	M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	46	<18	38.4	42.7	36.9	<18
			M	M	#	M	M	M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	<23	<23	<23
			M	M	#	M	M	M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	69.6	<24	56.3	58.7	53.3	<24
			M	M	#	M	M	M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	1160	322	741	827	622	182



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180412-80  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454516  
**Superseded Report:** 452622

**TPH CWG (S)**

Results Legend		Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-5&*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.16 Soil/Solid (S) 09/04/2018 13:00:00 12/04/2018 180412-80 17353781	0.00 - 0.16 Soil/Solid (S) 09/04/2018 15:18:00 12/04/2018 180412-80 17353782	0.00 - 0.16 Soil/Solid (S) 09/04/2018 15:30:00 12/04/2018 180412-80 17353791	0.00 - 0.16 Soil/Solid (S) 09/04/2018 15:43:00 12/04/2018 180412-80 17353783	0.00 - 0.16 Soil/Solid (S) 09/04/2018 15:55:00 12/04/2018 180412-80 17353790	0.00 - 0.16 Soil/Solid (S) 09/04/2018 16:08:00 12/04/2018 180412-80 17353780
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	70	75	82	82	80	72
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44 M	569 M	<44	<44 M	<44 M	<44 M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 #	<5 #	<5	<5 #	<5 #	<5 #
Benzene	<10 µg/kg	TM089	<10 M	<10 M	<10	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089	<2 M	<2 M	<2	<2 M	<2 M	<2 M
Ethylbenzene	<3 µg/kg	TM089	<3 M	<3 M	<3	<3 M	<3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089	<6 M	<6 M	<6	<6 M	<6 M	<6 M
o-Xylene	<3 µg/kg	TM089	<3 M	<3 M	<3	<3 M	<3 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	13.5	15.1	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	28.4	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	54.8	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	259	<10	<10	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	1070	<100	<100	2340	<100
Aliphatics >C16-C21	<100 µg/kg	TM173	5270	3180	<100	3960	4990	1660
Aliphatics >C21-C35	<100 µg/kg	TM173	22200	6180	2850	15300	20700	11100
Aliphatics >C35-C44	<100 µg/kg	TM173	3190	<100	<100	4200	2560	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173	30700	10400	2850	23500	30600	12700
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	37.8	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	172	<10	<10	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173	764	1130	612	<100	<100	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173	4340	7930	2270	4130	4480	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173	23000	12400	4860	14100	18500	4600
Aromatics >EC35-EC44	<100 µg/kg	TM173	4040	<100	1850	10900	13600	1000
Aromatics >EC40-EC44	<100 µg/kg	TM173	<100	<100	<100	3990	4800	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	32100	21500	9580	29200	36500	5600
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	62800	32500	12400	52700	67100	18300



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180412-80  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454516  
**Superseded Report:** 452622

**TPH CWG (S)**

Results Legend		Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		09/04/2018	09/04/2018	10/04/2018	10/04/2018	10/04/2018	09/04/2018
diss.filt	Dissolved / filtered sample.		16:21:00	16:50:00	14:10:00	14:20:00	14:33:00	16:39:00
tot.unfilt	Total / unfiltered sample.		12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
*	Subcontracted test.		180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17353788	17353792	17353786	17353784	17353785	17353787
(F)	Trigger breach confirmed							
1-5&*&@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
GRO Surrogate % recovery**	%	TM089	105	71	99	71	72	74
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44	<44	1510	<44	<44	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	<5	<5	<5	<5
Benzene	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Toluene	<2 µg/kg	TM089	<2	<2	<2	<2	<2	<2
Ethylbenzene	<3 µg/kg	TM089	<3	<3	<3	<3	<3	<3
m,p-Xylene	<6 µg/kg	TM089	<6	<6	<6	<6	<6	<6
o-Xylene	<3 µg/kg	TM089	<3	<3	<3	<3	<3	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	27.3	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	118	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	139	<10	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	680	<10	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173	594	<100	<100	<100	994	<100
Aliphatics >C16-C21	<100 µg/kg	TM173	2640	1260	<100	1280	3640	<100
Aliphatics >C21-C35	<100 µg/kg	TM173	7060	5680	1090	5570	16000	3000
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	<100	<100	3210	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173	10300	6940	1090	6860	23800	3000
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	92.4	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	454	<10	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173	340	301	<100	<100	758	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173	1340	1570	<100	1710	3310	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173	4070	6240	<100	7970	13900	3090
Aromatics >EC35-EC44	<100 µg/kg	TM173	<100	3850	<100	3880	8900	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173	<100	1260	<100	649	3110	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	5750	12000	<100	13600	26900	3090
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	16000	18900	2600	20400	50700	6080



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180412-80  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 454516  
Superseded Report: 452622

## Table of Results - Appendix

Method No	Reference	Description
PM001		Preparation of Samples for Metals Analysis
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test
TM008	BS 1377:Part 1977	Particle size distribution of solid samples
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180412-80  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454516  
**Superseded Report:** 452622

## Test Completion Dates

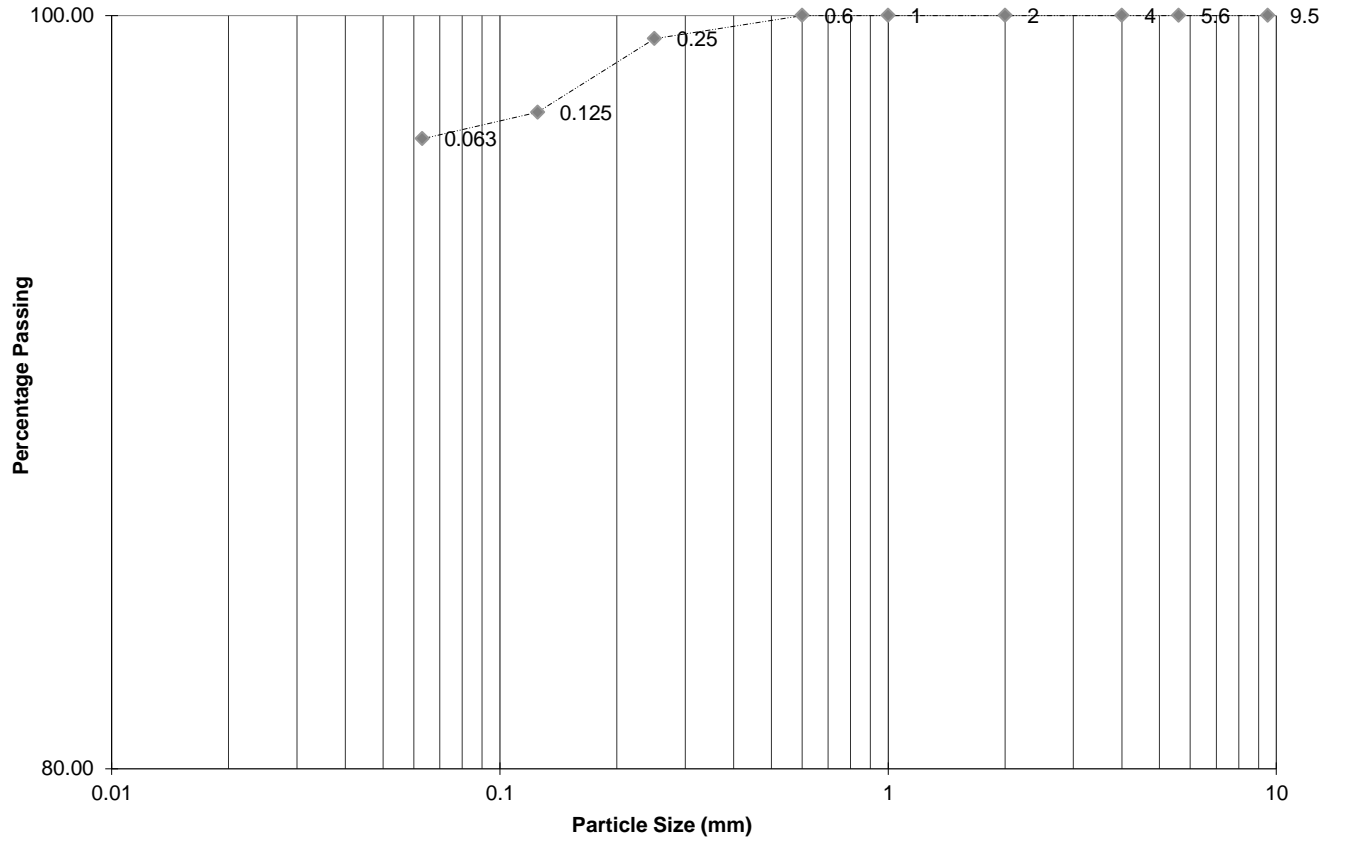
Lab Sample No(s) Customer Sample Ref.	17353781	17353782	17353791	17353783	17353790	17353780	17353788	17353792	17353786	17353784
	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06	CG 08	CG 09	CG 10	CG 11
AGS Ref.										
Depth	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
EPH CWG (Aliphatic) GC (S)	19-Apr-2018	19-Apr-2018	19-Apr-2018	17-Apr-2018	17-Apr-2018	19-Apr-2018	19-Apr-2018	17-Apr-2018	19-Apr-2018	17-Apr-2018
EPH CWG (Aromatic) GC (S)	19-Apr-2018	19-Apr-2018	19-Apr-2018	17-Apr-2018	17-Apr-2018	19-Apr-2018	19-Apr-2018	17-Apr-2018	19-Apr-2018	17-Apr-2018
GRO by GC-FID (S)	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018
Metals in solid samples by OES	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018
OC, OP Pesticides and Triazine Herb	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018
Organotins on soils*	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
PAH by GCMS	19-Apr-2018	19-Apr-2018	18-Apr-2018	17-Apr-2018	17-Apr-2018	19-Apr-2018	19-Apr-2018	17-Apr-2018	19-Apr-2018	19-Apr-2018
Passing Through >63µm sieve	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018
PCBs by GCMS	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	18-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018
Sample description	13-Apr-2018	13-Apr-2018	13-Apr-2018	16-Apr-2018	16-Apr-2018	13-Apr-2018	13-Apr-2018	13-Apr-2018	13-Apr-2018	16-Apr-2018
TPH CWG GC (S)	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018

Lab Sample No(s) Customer Sample Ref.	17353785	17353787
	CG 12	CG 07B
AGS Ref.		
Depth	0.00 - 0.16	0.00 - 0.16
Type	Soil/Solid (S)	Soil/Solid (S)
EPH CWG (Aliphatic) GC (S)	17-Apr-2018	19-Apr-2018
EPH CWG (Aromatic) GC (S)	17-Apr-2018	19-Apr-2018
GRO by GC-FID (S)	19-Apr-2018	19-Apr-2018
Metals in solid samples by OES	18-Apr-2018	18-Apr-2018
OC, OP Pesticides and Triazine Herb	20-Apr-2018	20-Apr-2018
Organotins on soils*	02-May-2018	02-May-2018
PAH by GCMS	18-Apr-2018	17-Apr-2018
Passing Through >63µm sieve	18-Apr-2018	18-Apr-2018
PCBs by GCMS	19-Apr-2018	18-Apr-2018
Sample description	16-Apr-2018	13-Apr-2018
TPH CWG GC (S)	19-Apr-2018	19-Apr-2018

## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	100.00
600um	100.00
250um	99.38
125um	97.43
63um	96.73

Sample Number 17360574  
 Client H\_MOUCH\_LIV  
 Sample ID CG 06  
 depth 0.00-0.16

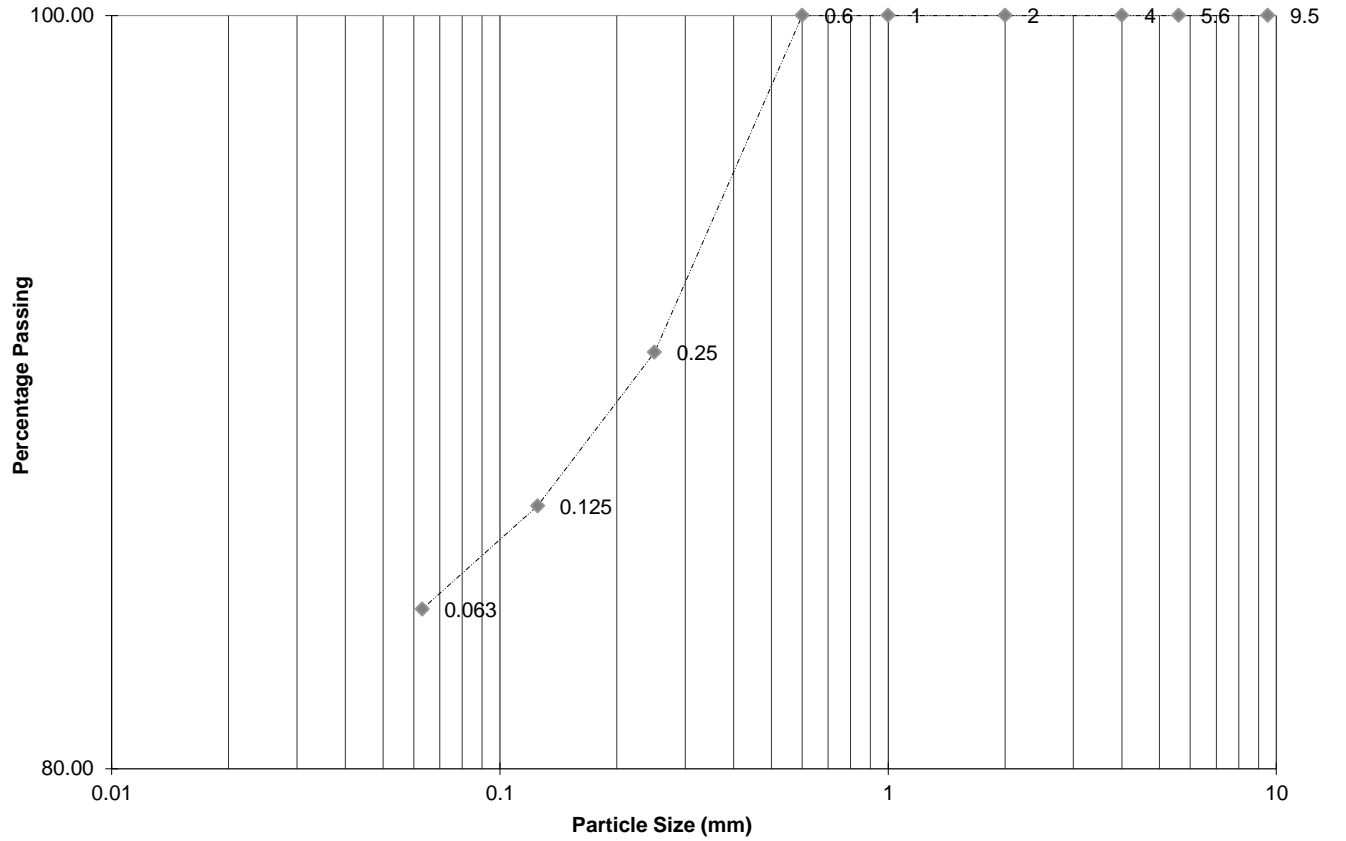




## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	100.00
600um	100.00
250um	91.05
125um	86.97
63um	84.23

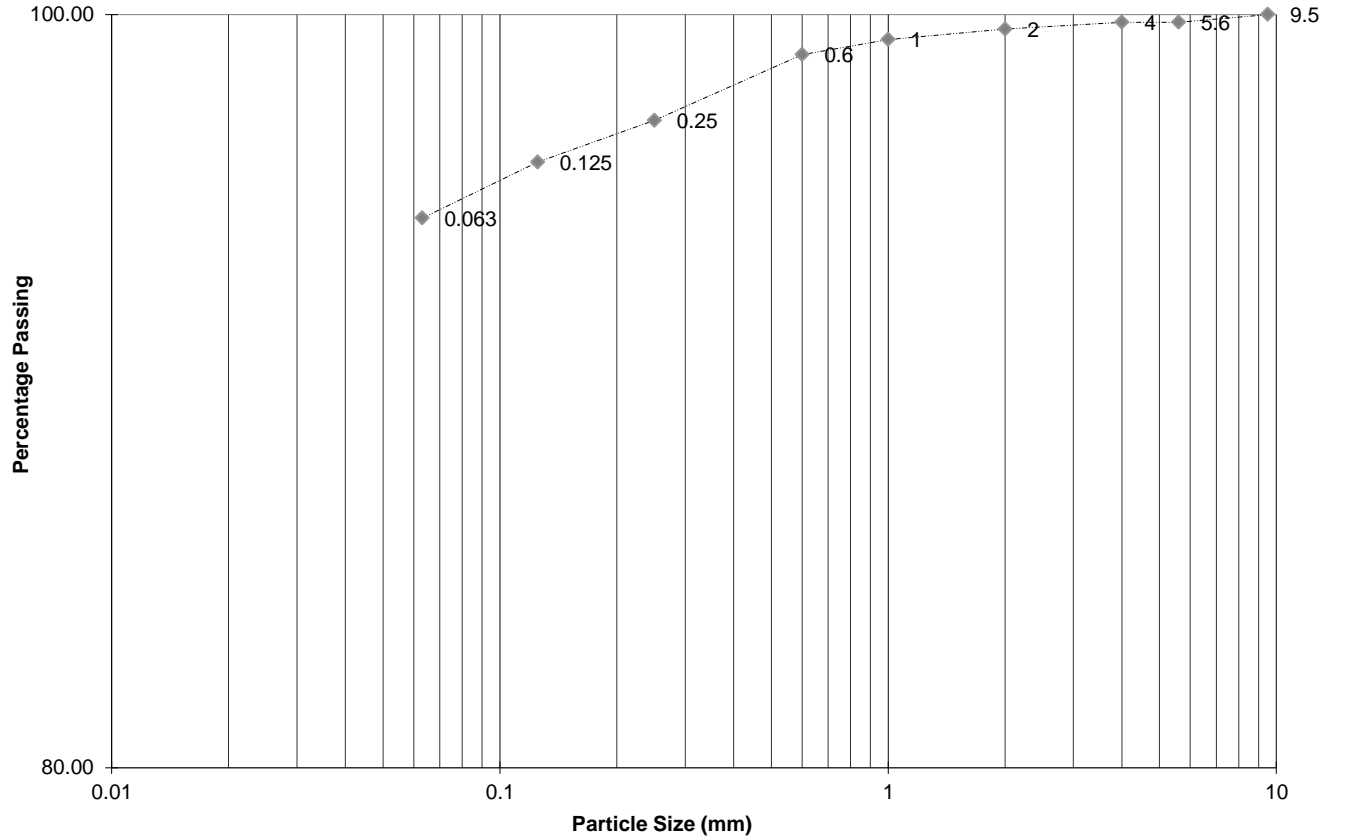
Sample Number 17360609  
Client H\_MOUCH\_LIV  
Sample ID CG07B  
depth 0.00-0.16



## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	99.79
4	99.79
2	99.61
1	99.33
600um	98.93
250um	97.19
125um	96.08
63um	94.59

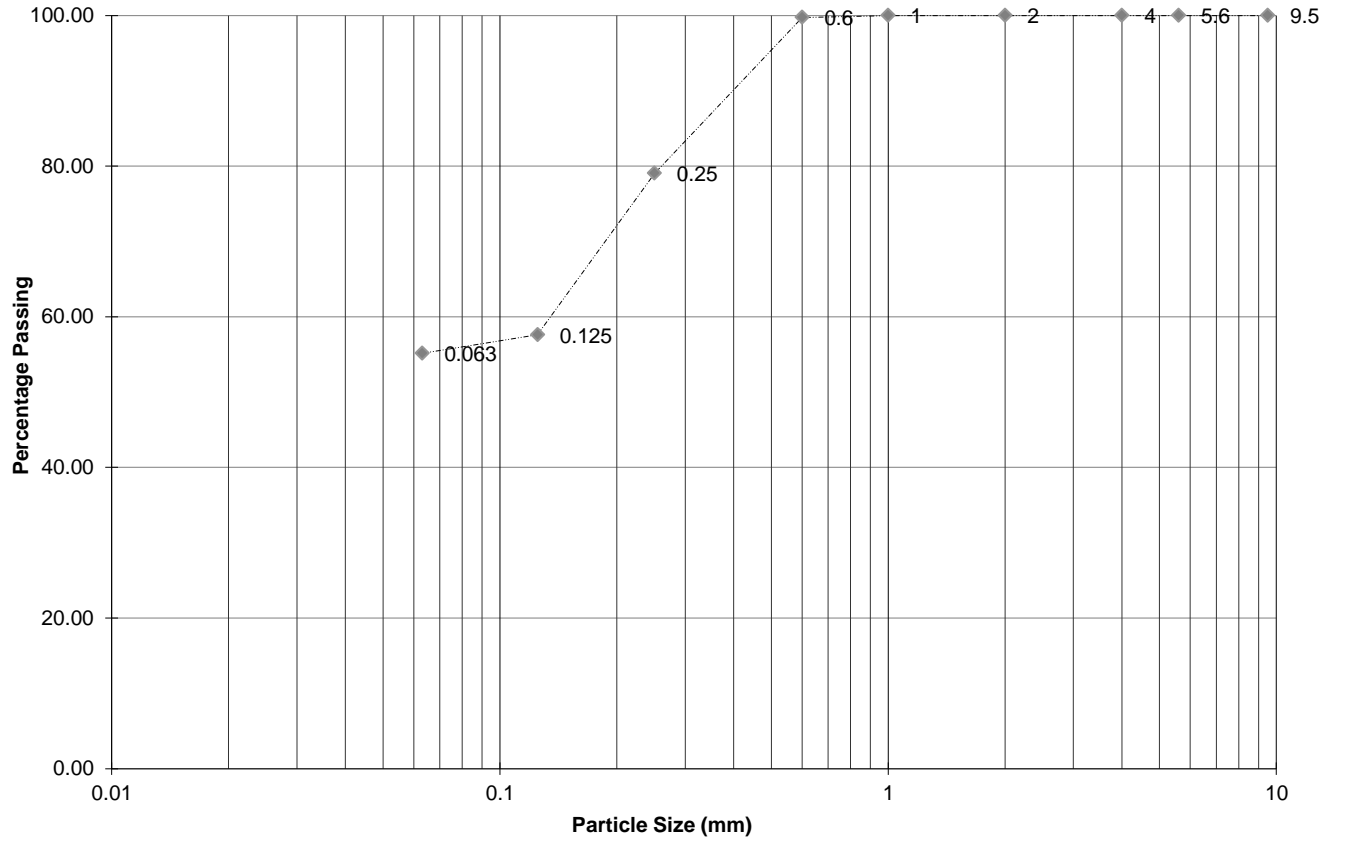
Sample Number 17360622  
 Client H\_MOUCH\_LIV  
 Sample ID CG 01  
 depth 0.00-0.16



## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	100.00
600um	99.74
250um	79.04
125um	57.61
63um	55.16

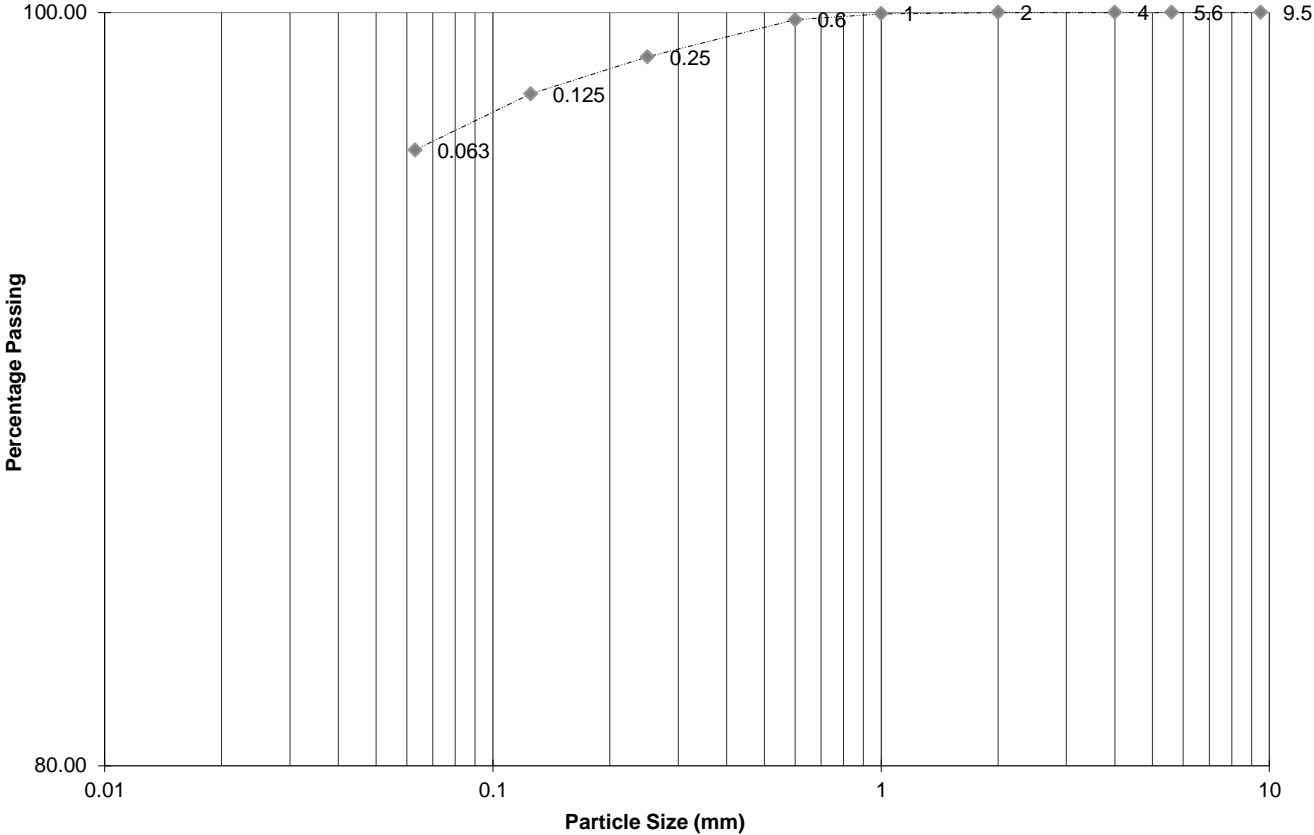
Sample Number 17360635  
 Client H\_MOUCH\_LIV  
 Sample ID CG 08  
 depth 0.00-0.16



### Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	99.97
600um	99.81
250um	98.82
125um	97.84
63um	96.35

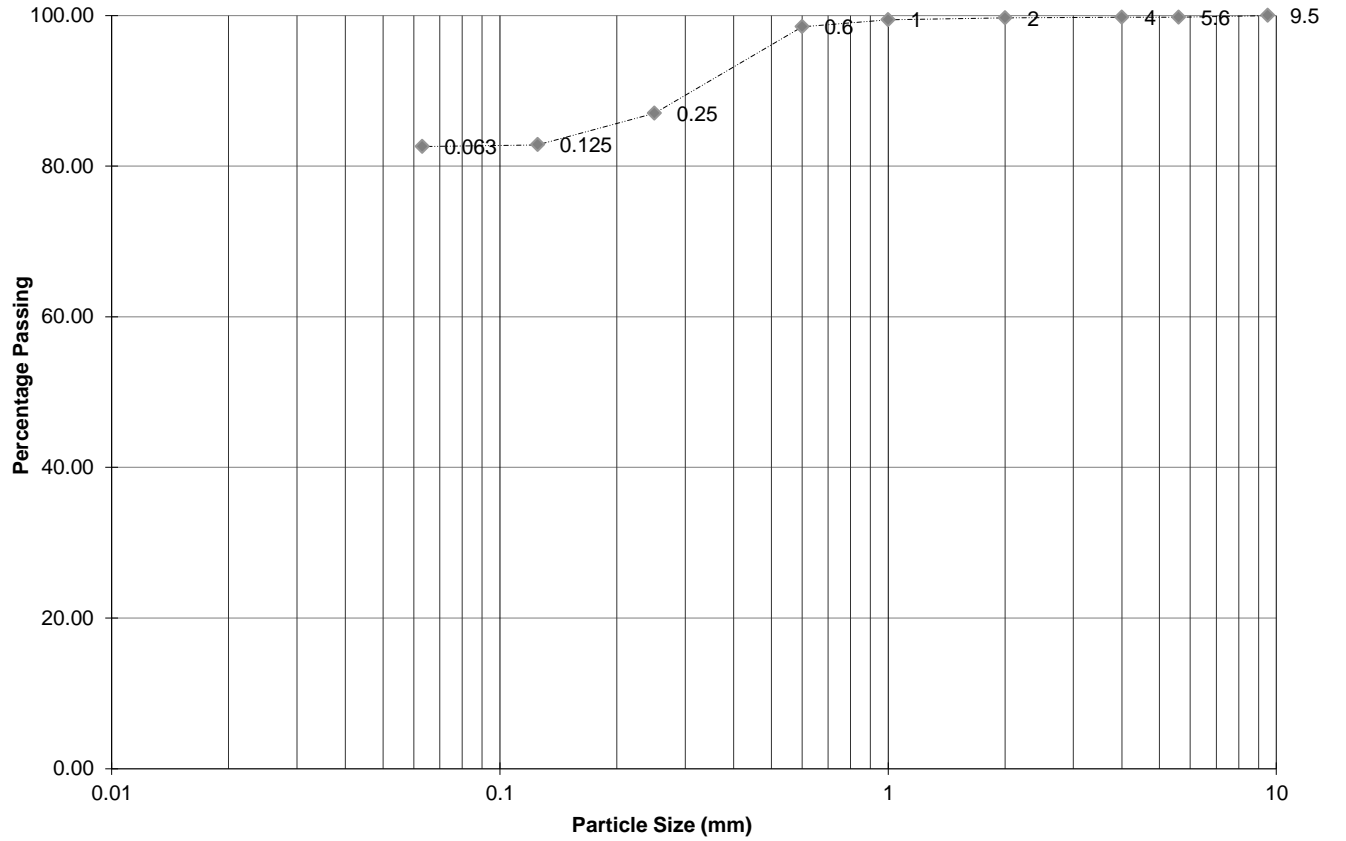
Sample Number 17361933  
 Client H\_MOUCH\_LIV  
 Sample ID CG 09  
 depth 0.00-0.16



## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	99.77
4	99.77
2	99.66
1	99.43
600um	98.51
250um	87.02
125um	82.83
63um	82.61

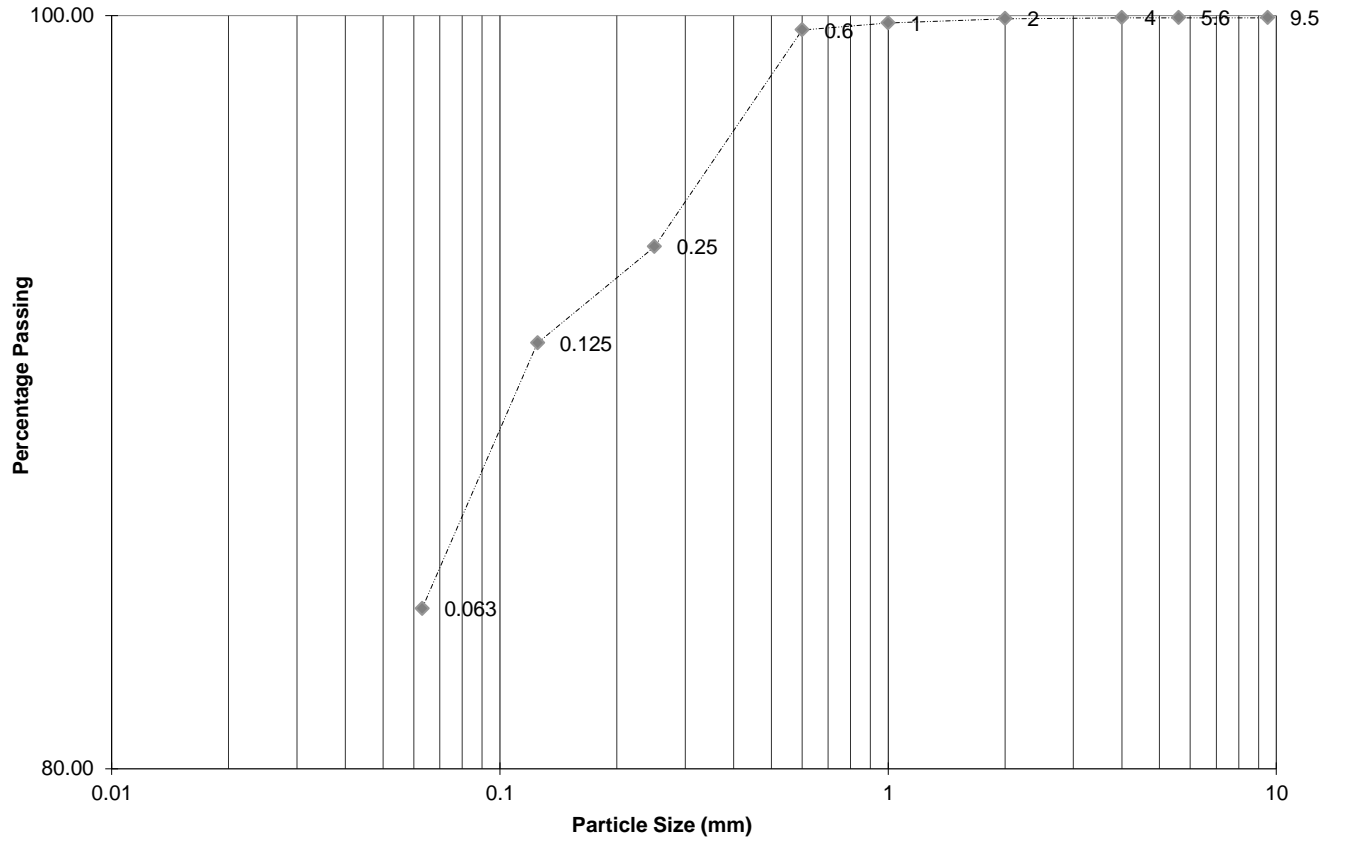
Sample Number 17361956  
 Client \_\_MOUCH\_LIV  
 Sample ID CG 03  
 depth 0.00-0.16



## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	99.94
5.6	99.94
4	99.94
2	99.91
1	99.80
600um	99.62
250um	93.86
125um	91.30
63um	84.25

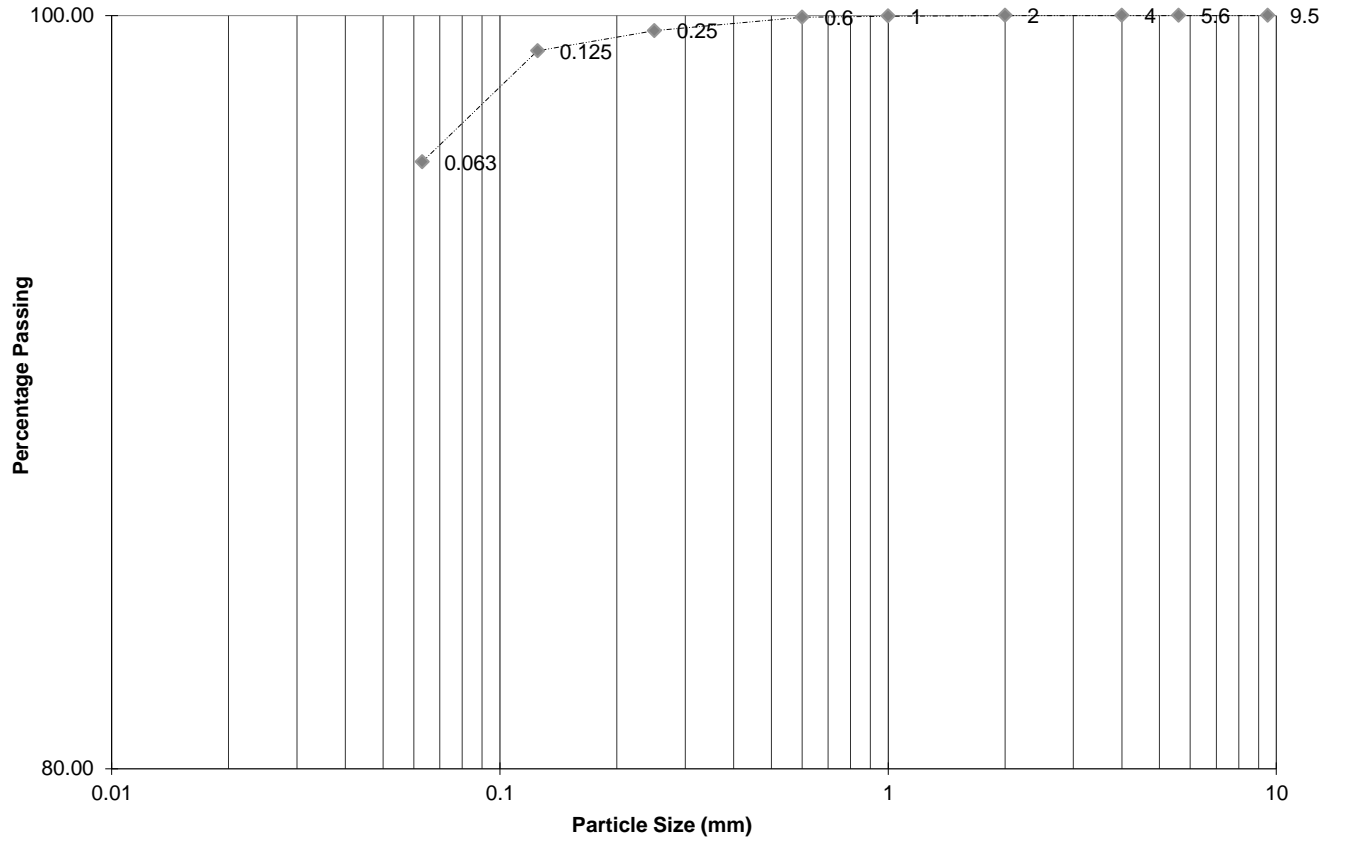
Sample Number 17361979  
 Client H\_MOUCH\_LIV  
 Sample ID CG10  
 depth 0.00-0.16



## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	99.98
600um	99.95
250um	99.60
125um	99.06
63um	96.11

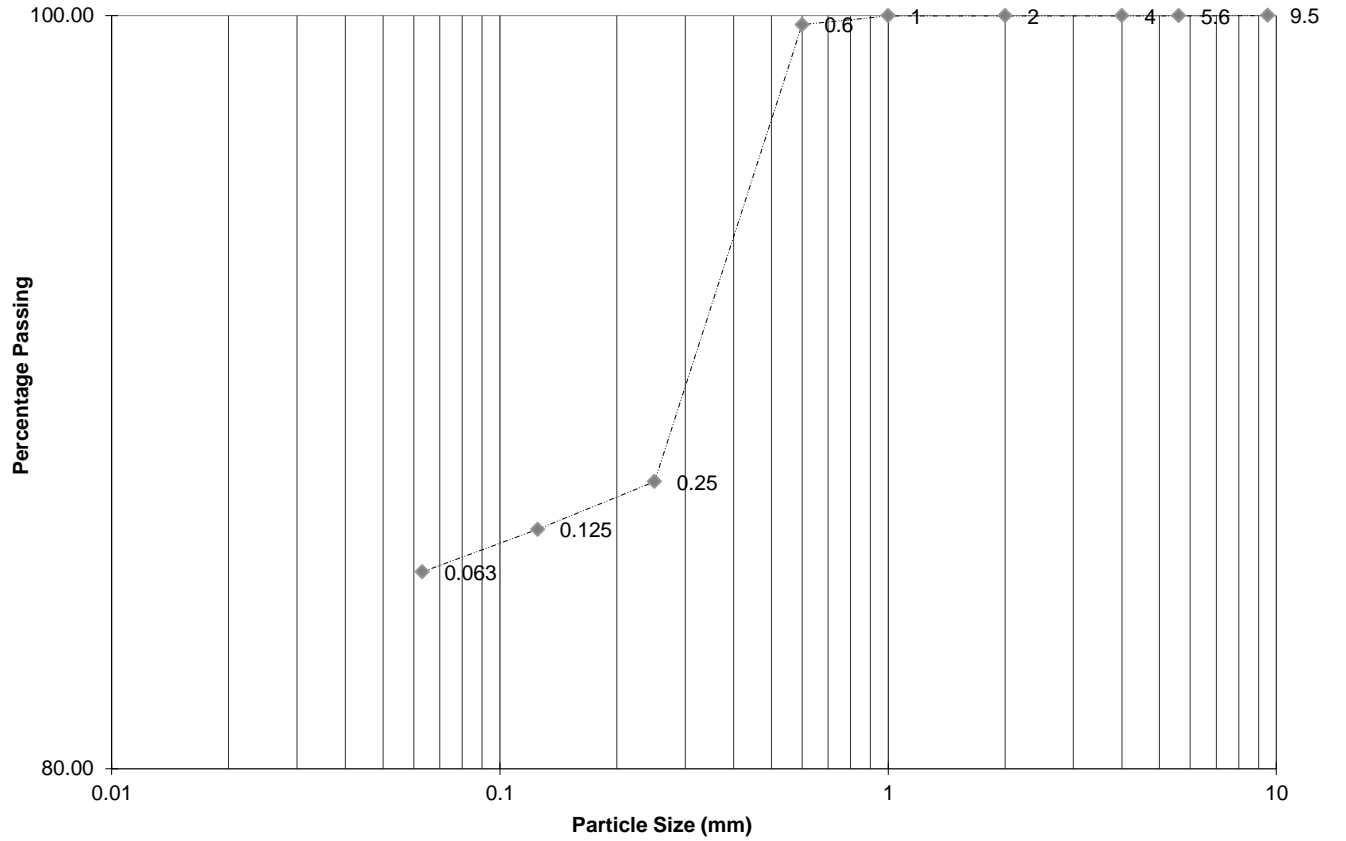
Sample Number 17362001  
 Client H\_MOUCH\_LIV  
 Sample ID CG 12  
 depth 0.00-0.16



## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	99.99
4	99.99
2	99.99
1	99.99
600um	99.75
250um	87.62
125um	86.35
63um	85.22

Sample Number 17362227  
 Client H\_MOUCH\_LIV  
 Sample ID CG 05  
 depth 0.00-0.16

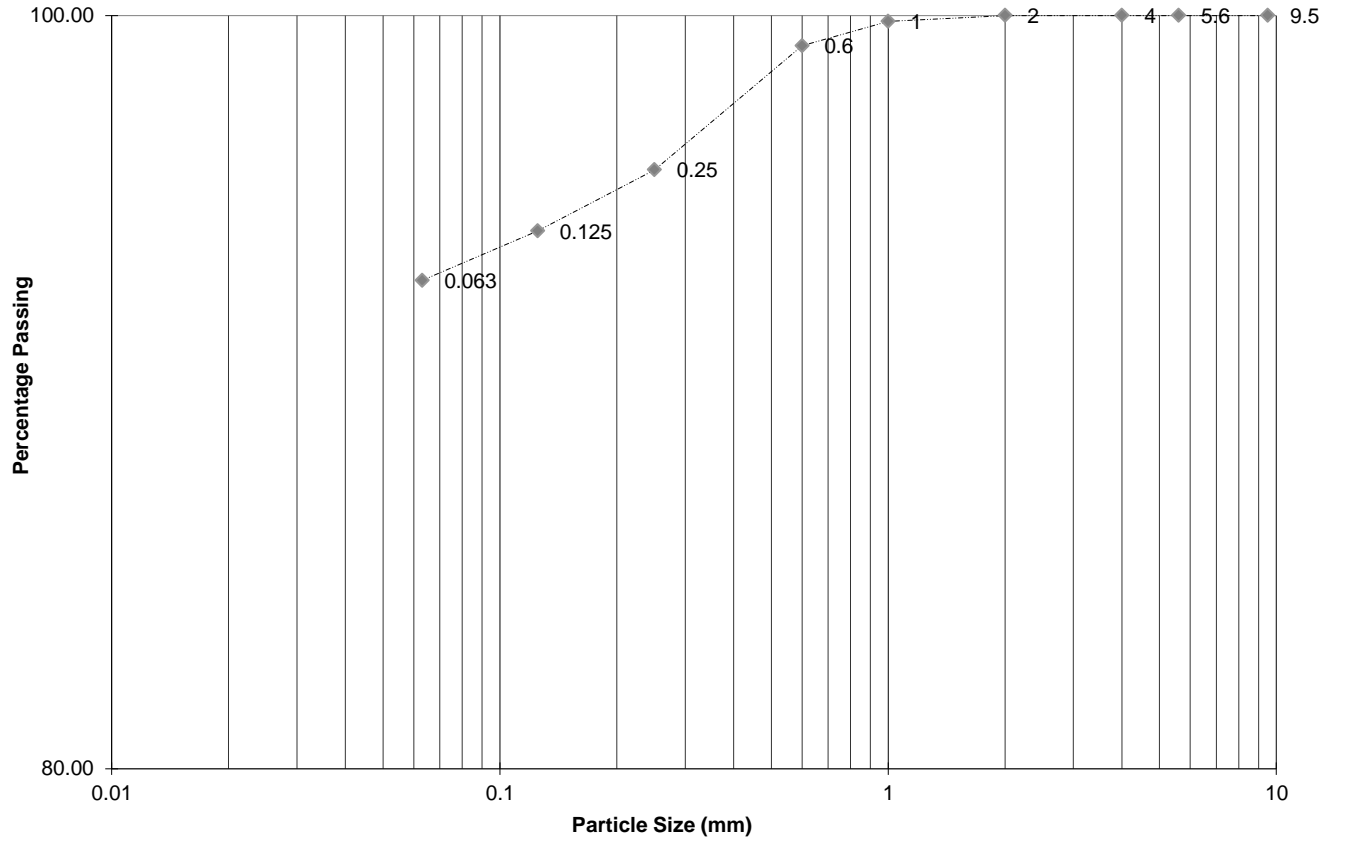




## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	99.84
600um	99.19
250um	95.90
125um	94.27
63um	92.97

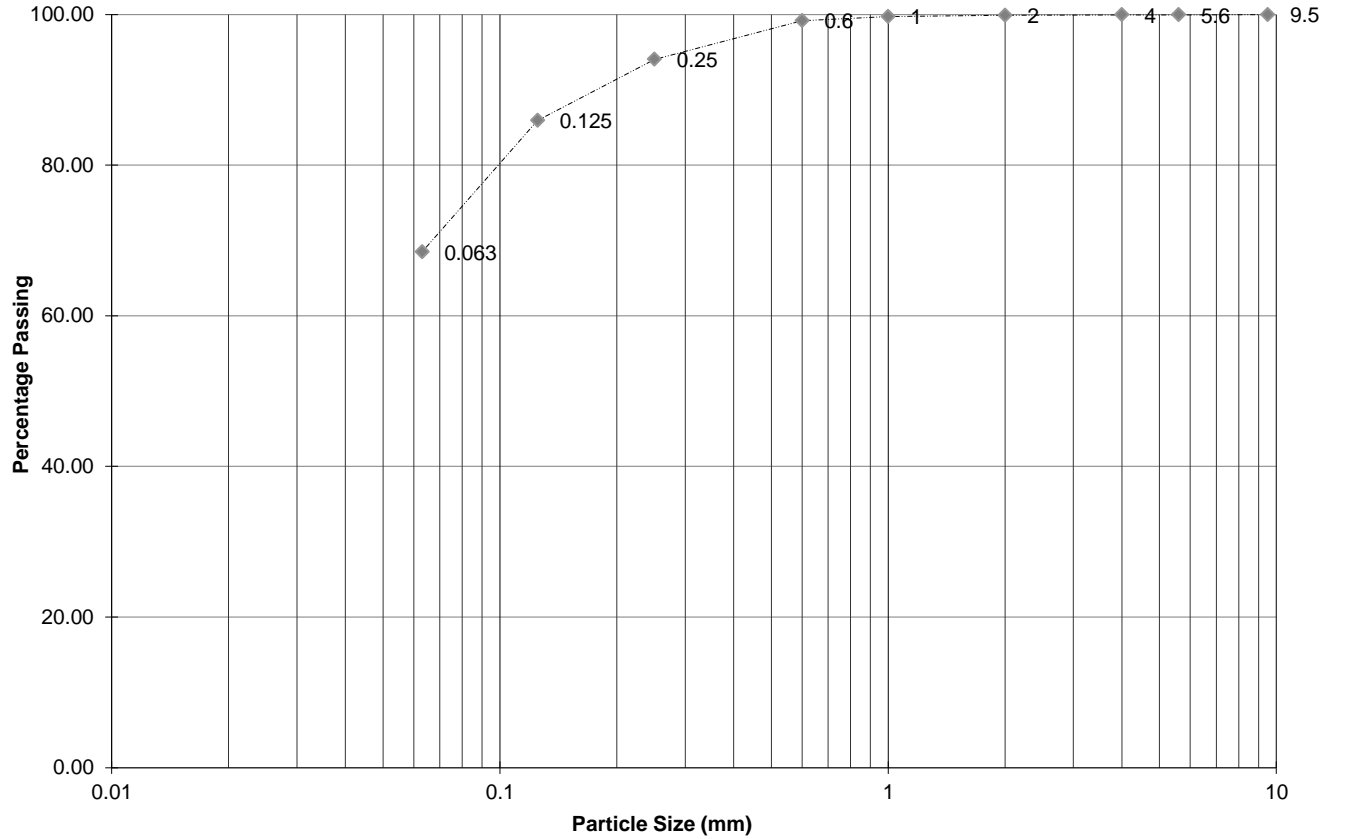
Sample Number 17362288  
 Client H\_MOUCH\_LIV  
 Sample ID CG 04  
 depth 0.00-0.16



## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	99.97
5.6	99.96
4	99.96
2	99.88
1	99.71
600um	99.17
250um	94.05
125um	85.92
63um	68.47

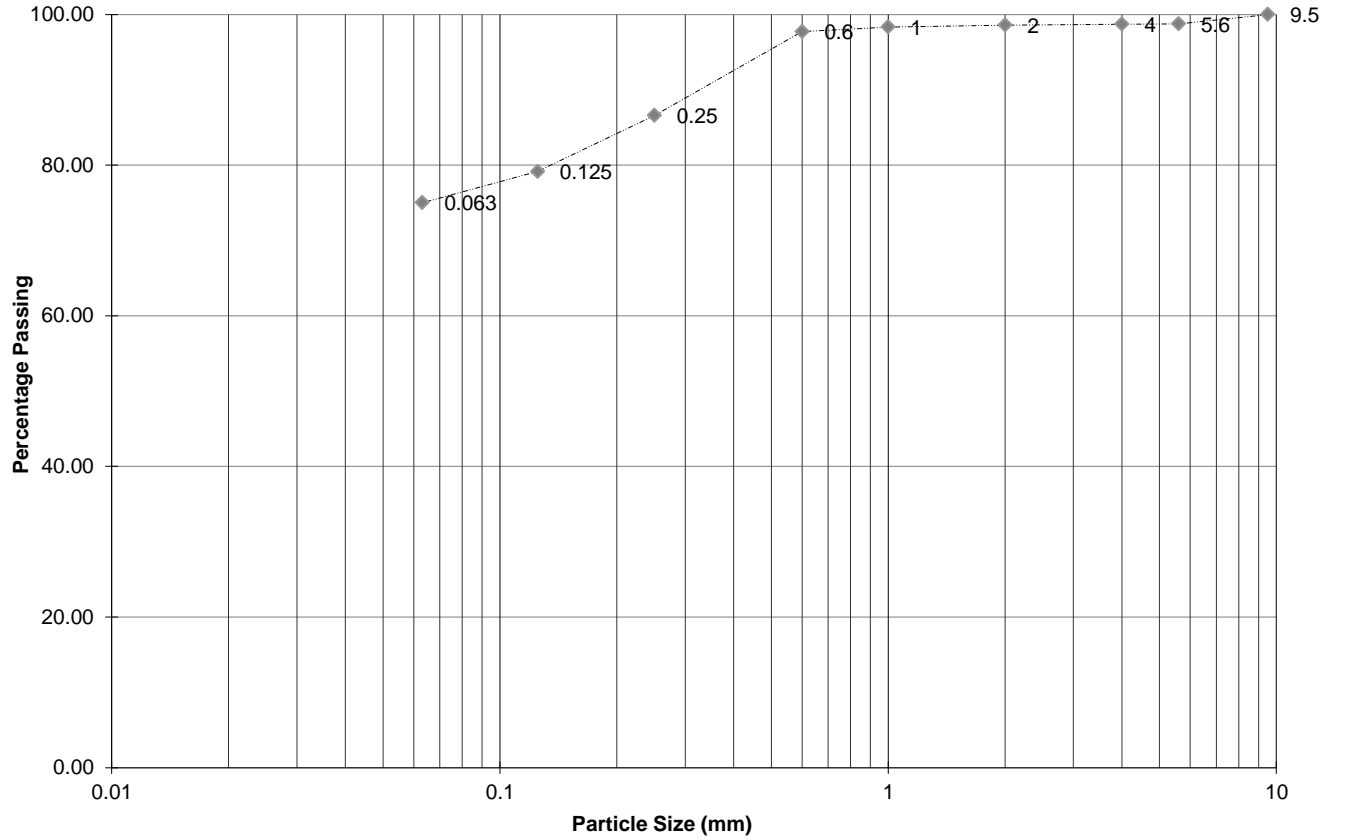
Sample Number 17362333  
 Client H\_MOUCH\_LIV  
 Sample ID CG 11  
 depth 0.00-0.16



## Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	98.76
4	98.71
2	98.58
1	98.32
600um	97.71
250um	86.61
125um	79.14
63um	75.01

Sample Number 17362343  
 Client H\_MOUCH\_LIV  
 Sample ID CG 02  
 depth 0.00-0.16





2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE  
T +44 (0)1462 480 400, F +44 (0)1462 480 403, E rpsmh@rpsgroup.com, W rpsgroup.com

## Certificate of Analysis

**Report No.:** 18-71044-1

**Issue No.:** 1

**Date of Issue** 30/04/2018

**Customer Details:** ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US

**Customer Contact:** Carrie Foster (2)

**Customer Order No.:** P60605

**Customer Reference:** 180412-80

**Quotation Reference:** 180222/01

**Description:** 12 soil samples

**Date Received:** 17/04/2018

**Date Started:** 18/04/2018

**Date Completed:** 27/04/2018

**Test Methods:** Details available on request (refer to SOP code against relevant result/s)

**Notes:** None

**Approved By:** **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.

Observations and interpretations are outside of the scope of UKAS accreditation.

Results reported herein relate only to the items supplied to the laboratory for testing.



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE  
 T +44 (0)1462 480 400, F +44 (0)1462 480 403, E rpsmh@rpsgroup.com, W rpsgroup.com

## Results Summary

Report No.: 18-71044-1

Customer Reference: 180412-80

Customer Order No: P60605

Customer Sample No	17365761	17364778	17363809	17373080	17373020	17365780	17365739	17365757	17362186	17363180	17373246					
Customer Sample ID	CG01	CG02	CG03	CG04	CG05	CG06	CG07B	CG08	CG09	CG10	CG11					
RPS Sample No	360940	360941	360942	360943	360944	360945	360946	360947	360948	360949	360950					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL					
Sample Depth (m)	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16					
Sampling Date	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	10/04/2018	10/04/2018					
Sampling Time								:1								
Determinand	CAS No	Codes	SOP	Units	RL											
dry solids (at 105°C)		N	397	% w/w		36.7	48.5	42.7	45.7	46.0	43.1	49.3	49.0	43.9	48.1	59.4
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation DW	0.02	< 0.05	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation DW	0.02	< 0.05	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation DW	0.1	< 0.27	< 0.21	< 0.23	< 0.22	< 0.22	< 0.23	< 0.20	< 0.20	< 0.23	< 0.21	< 0.15
monophenyltin (MPT)		N	in house	mg/kg as cation DW	0.02	< 0.05	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation DW	0.02	0.07	0.07	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation DW	0.05	< 0.14	< 0.10	< 0.12	< 0.11	< 0.11	< 0.12	< 0.10	< 0.10	< 0.11	< 0.10	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation DW	0.02	< 0.05	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.02



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE  
 T +44 (0)1462 480 400, F +44 (0)1462 480 403, E rpsmh@rpsgroup.com, W rpsgroup.com

## Results Summary

Report No.: 18-71044-1

Customer Reference: 180412-80

Customer Order No: P60605

<b>Customer Sample No</b>	<b>17373252</b>
Customer Sample ID	CG12
RPS Sample No	360951
<b>Sample Type</b>	<b>SOIL</b>
Sample Depth (m)	0.00-0.16
Sampling Date	10/04/2018
Sampling Time	

Determinand	CAS No	Codes	SOP	Units	RL	
dry solids (at 105°C)		N	397	% w/w		46.5
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation DW	0.02	< 0.04
diphenyltin (DPT)		N	in house	mg/kg as cation DW	0.02	< 0.04
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation DW	0.1	< 0.22
monophenyltin (MPT)		N	in house	mg/kg as cation DW	0.02	< 0.04
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation DW	0.02	< 0.04
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation DW	0.05	< 0.11
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation DW	0.02	< 0.04



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE  
T +44 (0)1462 480 400, F +44 (0)1462 480 403, E rpsmh@rpsgroup.com, W rpsgroup.com

## Deviating Samples

Report No.: 18-71044-1

Customer Reference: 180412-80

Customer Order No: P60605

Our policy on Deviating Samples and reference list of Holding Times applied can be supplied on request. These have been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).

RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling, and it is possible that samples submitted may be declared to be deviating.

Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be invalid. The reason for a sample being declared to be deviating is indicated below.

Where no sampling date was supplied, samples have been declared to be deviating. However, if a date of sampling can be supplied, the results may be reissued with the deviating sample status removed.

Where the sample container used was unsuitable, the appropriate Holding Time was exceeded, or the sample is flagged as deviating for some other reason, re-sampling/re-submission may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating Sample	Reason for Sample Deviation
360940	17365761		09/04/2018	60 ml Amber Jar	No	
360941	17364778		09/04/2018	60 ml Amber Jar	No	
360942	17363809		09/04/2018	60 ml Amber Jar	No	
360943	17373080		09/04/2018	60 ml Amber Jar	No	
360944	17373020		09/04/2018	60 ml Amber Jar	No	
360945	17365780		09/04/2018	60 ml Amber Jar	No	
360946	17365739		09/04/2018	60 ml Amber Jar	No	
360947	17365757		09/04/2018	60 ml Amber Jar	No	
360948	17362186		09/04/2018	60 ml Amber Jar	No	
360949	17363180		10/04/2018	60 ml Amber Jar	No	
360950	17373246		10/04/2018	60 ml Amber Jar	No	
360951	17373252		10/04/2018	60 ml Amber Jar	No	



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE  
T +44 (0)1462 480 400, F +44 (0)1462 480 403, E rpsmh@rpsgroup.com, W rpsgroup.com

## Report Information

### Key to Report Codes

U	UKAS Accredited
F	UKAS Flexible Scope
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

### Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

### Sample Retention and Disposal

Samples will generally\* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

\*Sample retention may be subject to agreement with the customer for particular projects





# CERTIFICATE OF ANALYSIS

<b>SDG:</b>	180412-80	<b>Client Reference:</b>	62240712	<b>Report Number:</b>	454516
<b>Location:</b>	Lowestoft	<b>Order Number:</b>	62240712	<b>Superseded Report:</b>	452622

## Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

## General

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

## Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

## Asbestos

### Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Astestost Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

### Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

**Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.**

**The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.**



Unit 7-8 Hawarden Business Park  
Manor Road (off Manor Lane)  
Hawarden  
Deeside  
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

WSP UK Limited  
3rd Floor  
Station House  
Mercury Court  
Titheburn Street  
Liverpool  
L2 2QP

**Attention:** Neil Balderstone

## CERTIFICATE OF ANALYSIS

**Date:** 30 April 2018  
**Customer:** H\_MOUCH\_LIV  
**Sample Delivery Group (SDG):** 180423-34  
**Your Reference:** 62240712  
**Location:** Lowestoft  
**Report No:** 454099

We received 4 samples on Saturday April 21, 2018 and 4 of these samples were scheduled for analysis which was completed on Monday April 30, 2018. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Approved By:

**Sonia McWhan**

Operations Manager





# CERTIFICATE OF ANALYSIS

Validated

SDG: 180423-34  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 454099  
Superseded Report:

## Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
17424916	WS01		0.00 - 0.20	19/04/2018
17424917	WS02		0.00 - 0.20	19/04/2018
17424918	WS03		0.00 - 0.20	19/04/2018
17424919	WS04		0.00 - 0.20	19/04/2018

**Maximum Sample/Coolbox Temperature (°C) :**

**15.0**

**ISO5667-3 Water quality - Sampling - Part3 -**

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

**Only received samples which have had analysis scheduled will be shown on the following pages.**



CERTIFICATE OF ANALYSIS

Validated

SDG: 180423-34
Location: Lowestoft

Client Reference: 62240712
Order Number: 62240712

Report Number: 454099
Superseded Report:

Results Legend

X Test
N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Table with columns: Lab Sample No(s), Customer Sample Reference, AGS Reference, Depth (m), Container, Sample Type. Rows include sample IDs 17424916, 17424917, 17424918, 17424919 and various container types like HNO3 Unfiltered (ALE204) and 500ml Plastic (ALE208).

Main test results table with columns: Parameter (e.g., Alkalinity as CaCO3, Ammoniacal Nitrogen), All, NDPs: 0 Tests: 4, and 16 columns of test results (X or blank) corresponding to the container types defined in the header.

17424919
WS04
0.00 - 0.20
Vial (ALE297)
SW
X



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180423-34  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454099  
**Superseded Report:**

Results Legend		Customer Sample Ref.	WS01	WS02	WS03	WS04		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.20	0.00 - 0.20	0.00 - 0.20	0.00 - 0.20		
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)		
aq	Aqueous / settled sample.		19/04/2018	19/04/2018	19/04/2018	19/04/2018		
diss.filt	Dissolved / filtered sample.		10:15:00	10:30:00	10:50:00	11:00:00		
tot.unfilt	Total / unfiltered sample.		21/04/2018	21/04/2018	21/04/2018	21/04/2018		
*	Subcontracted test.		180423-34	180423-34	180423-34	180423-34		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17424916	17424917	17424918	17424919		
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Suspended solids, Total	<2 mg/l	TM022	42.3	36.8	40.8	34.2		
			#	#	#	#		
Alkalinity, Total as CaCO3	<2 mg/l	TM043	135	124	122	122		
			#	#	#	#		
Organic Carbon, Total	<3 mg/l	TM090	<3	<3	<3	<3		
			#	#	#	#		
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	<0.2	<0.2	<0.2		
			#	#	#	#		
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	45.8	46.7	46.3	45.1		
			#	#	#	#		
Aluminium (diss.filt)	<10 µg/l	TM152	<60	<60	<60	<60		
			2 #	2 #	2 #	2 #		
Arsenic (diss.filt)	<0.5 µg/l	TM152	<3	<3	<3	<3		
			2 #	2 #	2 #	2 #		
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.48	<0.48	<0.48	<0.48		
			2 #	2 #	2 #	2 #		
Chromium (diss.filt)	<1 µg/l	TM152	<6	<6	<6	<6		
			2 #	2 #	2 #	2 #		
Copper (diss.filt)	<0.3 µg/l	TM152	3.32	1.84	<1.8	<1.8		
			2 #	2 #	2 #	2 #		
Lead (diss.filt)	<0.2 µg/l	TM152	<1.2	<1.2	<1.2	<1.2		
			2 #	2 #	2 #	2 #		
Manganese (diss.filt)	<3 µg/l	TM152	<18	18.5	22.3	18.9		
			2 #	2 #	2 #	2 #		
Nickel (diss.filt)	<0.4 µg/l	TM152	3.13	<2.4	<2.4	3.32		
			2 #	2 #	2 #	2 #		
Zinc (diss.filt)	<1 µg/l	TM152	26.8	19.9	21.2	8.88		
			2 #	2 #	2 #	2 #		
Iron (Dis.Filt)	<0.019 mg/l	TM152	<0.114	<0.114	<0.114	<0.114		
			2 #	2 #	2 #	2 #		
Sodium (Tot. Unfilt.)	<0.047 mg/l	TM152	8440	8940	9050	8890		
			#	#	#	#		
Magnesium (Tot. Unfilt.)	<0.05 mg/l	TM152	1130	1160	1150	1130		
			#	#	#	#		
Potassium (Tot. Unfilt.)	<0.2 mg/l	TM152	361	356	355	349		
			#	#	#	#		
Calcium (Tot. Unfilt.)	<0.057 mg/l	TM152	440	450	415	461		
			#	#	#	#		
EPH Range >C10 - C40 (aq)	<100 µg/l	TM172	<100	<100	<100	<100		
Total EPH (C6-C40) (aq)	<100 µg/l	TM172	<100	<100	<100	<100		
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	<0.01	<0.01	<0.01		
			2	2	2	2		
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05	<0.05	<0.05	<0.05		
			#	#	#	#		
Sulphate	<2 mg/l	TM184	2640	2620	2610	2600		
			#	#	#	#		
Chloride	<2 mg/l	TM184	18400	18500	18000	18300		
			#	#	#	#		
Nitrate as NO3	<0.3 mg/l	TM184	<0.3	<0.3	<0.3	<0.3		
			#	#	#	#		
pH	<1 pH Units	TM256	7.9	7.92	7.93	7.9		
			#	#	#	#		
Apparent Colour	<1 mg/l Pt/Co	TM261	27.3	13.7	9.61	11.3		
True Colour	<1 mg/l Pt/Co	TM261	1.38	1.95	1.49	1.51		



CERTIFICATE OF ANALYSIS

Validated

SDG: 180423-34
Location: Lowestoft

Client Reference: 62240712
Order Number: 62240712

Report Number: 454099
Superseded Report:

GRO by GC-FID (W)

Table with columns: Results Legend, Customer Sample Ref., WS01, WS02, WS03, WS04, Component, LOD/Units, Method. Rows include Methyl tertiary butyl ether (MTBE), Benzene, Toluene, Ethylbenzene, m,p-Xylene, o-Xylene, Sum of detected BTEX, GRO >C5-C10, EPH (C6-C10).



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180423-34  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 454099  
Superseded Report:

## Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM261	Colour and Turbidity of Waters, Methods for the Examination of Waters and Associated Materials, HMSO, 1981, ISBN 0 11 7519553.	Determination of True and Apparent Colour by Spectrophotometry

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180423-34  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 454099  
**Superseded Report:**

## Test Completion Dates

Lab Sample No(s)	17424916	17424917	17424918	17424919
Customer Sample Ref.	WS01	WS02	WS03	WS04
AGS Ref.				
Depth	0.00 - 0.20	0.00 - 0.20	0.00 - 0.20	0.00 - 0.20
Type	Surface Water	Surface Water	Surface Water	Surface Water

Alkalinity as CaCO3	25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018
Ammoniacal Nitrogen	26-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Anions by Kone (w)	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Colour Test	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Conductivity (at 20 deg.C)	25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018
Dissolved Metals by ICP-MS	29-Apr-2018	29-Apr-2018	29-Apr-2018	29-Apr-2018
EPH (DRO) (C10-C40) Aqueous (W)	25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018
GRO by GC-FID (W)	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
Mercury Dissolved	28-Apr-2018	28-Apr-2018	28-Apr-2018	28-Apr-2018
Nitrite by Kone (w)	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
pH Value	25-Apr-2018	26-Apr-2018	25-Apr-2018	26-Apr-2018
Phosphate by Kone (w)	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Suspended Solids	24-Apr-2018	24-Apr-2018	24-Apr-2018	24-Apr-2018
Total EPH (aq)	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
Total Metals by ICP-MS	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Total Organic and Inorganic Carbon	27-Apr-2018	27-Apr-2018	24-Apr-2018	27-Apr-2018



# CERTIFICATE OF ANALYSIS

<b>SDG:</b> 180423-34	<b>Client Reference:</b> 62240712	<b>Report Number:</b> 454099
<b>Location:</b> Lowestoft	<b>Order Number:</b> 62240712	<b>Superseded Report:</b>

## Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

## General

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

## Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

## Asbestos

### Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Astestost Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

### Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

**Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.**

**The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.**



Unit 7-8 Hawarden Business Park  
Manor Road (off Manor Lane)  
Hawarden  
Deeside  
CH5 3US

Tel: (01244) 528700  
Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com  
Website: www.alsenvironmental.co.uk

WSP UK Limited  
3rd Floor  
Station House  
Mercury Court  
Titheburn Street  
Liverpool  
L2 2QP

**Attention:** Neil Balderstone

## CERTIFICATE OF ANALYSIS

**Date:** 22 May 2018  
**Customer:** H\_MOUCH\_LIV  
**Sample Delivery Group (SDG):** 180424-31  
**Your Reference:** 62240712  
**Location:** Lowestoft  
**Report No:** 457244

We received 34 samples on Tuesday April 24, 2018 and 34 of these samples were scheduled for analysis which was completed on Tuesday May 22, 2018. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Approved By:

**Sonia McWhan**

Operations Manager





# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
17431917	VC02		0.80 - 1.20	20/04/2018
17431916	VC02		1.80 - 2.20	20/04/2018
17431915	VC02		2.80 - 3.20	20/04/2018
17431914	VC02		3.20 - 3.63	20/04/2018
17431903	VC03		0.80 - 1.20	20/04/2018
17431906	VC03		1.80 - 2.20	20/04/2018
17431905	VC03		2.80 - 3.20	20/04/2018
17431904	VC03		3.39 - 3.79	20/04/2018
17431908	VC04		0.80 - 1.20	19/04/2018
17431909	VC04		1.80 - 2.20	19/04/2018
17431910	VC04		2.80 - 3.20	19/04/2018
17431907	VC04		3.60 - 4.00	19/04/2018
17431895	VC05		0.80 - 1.20	19/04/2018
17431896	VC05		1.80 - 2.20	19/04/2018
17431898	VC05		2.53 - 2.93	19/04/2018
17431899	VC06		0.80 - 1.20	20/04/2018
17431900	VC06		2.00 - 2.46	20/04/2018
17431883	VC07		0.80 - 1.20	20/04/2018
17431882	VC07		1.60 - 2.00	20/04/2018
17431902	VC08		0.60 - 1.00	20/04/2018
17431901	VC08		1.00 - 1.45	20/04/2018
17431887	VC11		0.80 - 1.20	20/04/2018
17431886	VC11		1.80 - 2.20	20/04/2018
17431889	VC11		2.20 - 2.50	20/04/2018
17431891	VC10A		0.80 - 1.20	20/04/2018
17431890	VC10A		1.80 - 2.20	20/04/2018
17431892	VC10A		2.45 - 2.85	20/04/2018
17431913	VC12A		0.80 - 1.20	20/04/2018
17431911	VC12A		1.80 - 2.20	20/04/2018
17431912	VC12A		2.80 - 3.30	20/04/2018
17431884	VC01B		0.80 - 1.20	20/04/2018
17431885	VC01B		1.24 - 1.54	20/04/2018
17431893	VC09B		0.80 - 1.20	19/04/2018
17431894	VC09B		1.26 - 1.66	19/04/2018

### Maximum Sample/Coolbox Temperature (°C) :

ISO5667-3 Water quality - Sampling - Part3 - During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

**10.3**

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

**Only received samples which have had analysis scheduled will be shown on the following pages.**



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
 Location: Lowestoft

Client Reference: 62240712  
 Order Number: 62240712

Report Number: 457244  
 Superseded Report:

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
											S	S
<b>X</b> Test <b>N</b> No Determination Possible  Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other												
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Anions by ion Chromatography	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
CEN Readings	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Fluoride	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Loss on Ignition in soils	All	NDPs: 1 Tests: 33	X	X	X	X	X	X	X	X	X	X
Mercury Dissolved	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
											S	S
<b>X</b> Test <b>N</b> No Determination Possible  Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other												
Metals in solid samples by OES	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Mineral Oil	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
OC, OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Organotins on soils*	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
PAH by GCMS	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Passing Through >63µm sieve	All	NDPs: 1 Tests: 33	X	X	X	X	X	X	X	X	X	X
PCBs by GCMS	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Polybrominated Diphenyl Ethers*	All	NDPs: 1 Tests: 33	X	X	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Solid Content	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X
Total Dissolved Solids	All	NDPs: 0 Tests: 34	X	X	X	X	X	X	X	X	X	X







# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
 Location: Lowestoft

Client Reference: 62240712  
 Order Number: 62240712

Report Number: 457244  
 Superseded Report:

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type		
	X	Test	N	No Determination Possible									
<b>Sample Types -</b> S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other		17431917		VC02			0.80 - 1.20	250g Amber Jar (ALE210) 1kg TUB	S				
		17431916		VC02			1.80 - 2.20	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S				
		17431915		VC02			2.80 - 3.20	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S				
		17431914		VC02			3.20 - 3.63	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S				
		17431903		VC03			0.80 - 1.20	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S				
		17431906		VC03			1.80 - 2.20	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S				
		17431905		VC03			2.80 - 3.20	1kg TUB	S				
	Total Organic Carbon	All											
	Total Sulphate	All											
	TPH CWG GC (S)	All											
VOC MS (S)	All												

17431896	VC05		1.80 - 2.20	1kg TUB	S						
17431895	VC05		0.80 - 1.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X					
				1kg TUB	S		X				
17431907	VC04		3.60 - 4.00	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X					
				1kg TUB	S		X				
17431910	VC04		2.80 - 3.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X					
				1kg TUB	S		X				
17431909	VC04		1.80 - 2.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X					
				1kg TUB	S		X				
17431908	VC04		0.80 - 1.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X					
				1kg TUB	S		X				
17431904	VC03		3.39 - 3.79	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X					
				1kg TUB	S		X				
17431905	VC03		2.80 - 3.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X					



# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

**Results Legend**

- X Test  
N No Determination Possible

Sample Types -  
 S - Soil/Solid  
 UNS - Unspecified Solid  
 GW - Ground Water  
 SW - Surface Water  
 LE - Land Leachate  
 PL - Prepared Leachate  
 PR - Process Water  
 SA - Saline Water  
 TE - Trade Effluent  
 TS - Treated Sewage  
 US - Untreated Sewage  
 RE - Recreational Water  
 DW - Drinking Water  
 Non-regulatory  
 UNL - Unspecified Liquid  
 SL - Sludge  
 G - Gas  
 OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
17431896	VC05		1.80 - 2.20	250g Amber Jar (ALE210)	S
17431898	VC05		2.53 - 2.93	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S
17431899	VC06		0.80 - 1.20	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S
17431900	VC06		2.00 - 2.46	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S
17431883	VC07		0.80 - 1.20	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S
17431882	VC07		1.60 - 2.00	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S
17431902	VC08		0.60 - 1.00	250g Amber Jar (ALE210) 1kg TUB	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 34			X X X X X X X
Anions by ion Chromatography	All	NDPs: 0 Tests: 34			X X X X X X X
Anions by Kone (w)	All	NDPs: 0 Tests: 34			X X X X X X X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 34			X X X X X X X
CEN Readings	All	NDPs: 0 Tests: 34			X X X X X X X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 34			X X X X X X X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 34			X X X X X X X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 34			X X X X X X X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 34			X X X X X X X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 34			X X X X X X X
Fluoride	All	NDPs: 0 Tests: 34			X X X X X X X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 34			X X X X X X X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 34			X X X X X X X
Loss on Ignition in soils	All	NDPs: 1 Tests: 33			X X X X X X X
Mercury Dissolved	All	NDPs: 0 Tests: 34			X X X X X X X





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<b>X</b> Test  <b>N</b> No Determination Possible	17431896	VC05		1.80 - 2.20	250g Amber Jar (ALE210)	S
	17431898	VC05		2.53 - 2.93	60g VOC (ALE215)	S
	17431899	VC06		0.80 - 1.20	250g Amber Jar (ALE210)	S
	17431900	VC06		2.00 - 2.46	60g VOC (ALE215)	S
	17431883	VC07		0.80 - 1.20	250g Amber Jar (ALE210)	S
	17431882	VC07		1.60 - 2.00	60g VOC (ALE215)	S
	17431902	VC08		0.60 - 1.00	250g Amber Jar (ALE210)	S
Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other						
Metals in solid samples by OES	All	NDPs: 0 Tests: 34				
Mineral Oil	All	NDPs: 0 Tests: 34				
OC, OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 34				
Organotins on soils*	All	NDPs: 0 Tests: 34				
PAH by GCMS	All	NDPs: 0 Tests: 34				
Passing Through >63µm sieve	All	NDPs: 1 Tests: 33				
PCBs by GCMS	All	NDPs: 0 Tests: 34				
pH	All	NDPs: 0 Tests: 34				
Phenols by HPLC (S)	All	NDPs: 0 Tests: 34				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 34				
Polybrominated Diphenyl Ethers*	All	NDPs: 1 Tests: 33				
Sample description	All	NDPs: 0 Tests: 34				
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 34				
Solid Content	All	NDPs: 0 Tests: 34				
Total Dissolved Solids	All	NDPs: 0 Tests: 34				





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	<span style="background-color: yellow; border: 1px solid black; padding: 2px;">X</span> Test	<span style="background-color: red; color: white; border: 1px solid black; padding: 2px;">N</span> No Determination Possible										
<b>Sample Types -</b> S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other												
Total Organic Carbon	All											
Total Sulphate	All											
TPH CWG GC (S)	All											
VOC MS (S)	All											

17431892	VC10A	2.45 - 2.85	250g Amber Jar (ALE210)	S		X							
			1kg TUB	S			X						
17431890	VC10A	1.80 - 2.20	60g VOC (ALE215)	S							X		
			250g Amber Jar (ALE210)	S	X		X		X				
			1kg TUB	S									
			60g VOC (ALE215)	S							X		
17431891	VC10A	0.80 - 1.20	250g Amber Jar (ALE210)	S	X		X		X			X	
			1kg TUB	S									
			60g VOC (ALE215)	S								X	
			250g Amber Jar (ALE210)	S	X		X		X				
			60g VOC (ALE215)	S								X	
17431889	VC11	2.20 - 2.50	250g Amber Jar (ALE210)	S	X		X		X			X	
			1kg TUB	S									
			60g VOC (ALE215)	S								X	
			250g Amber Jar (ALE210)	S	X		X		X				
17431886	VC11	1.80 - 2.20	60g VOC (ALE215)	S								X	
			250g Amber Jar (ALE210)	S	X		X		X				
			1kg TUB	S									
			60g VOC (ALE215)	S								X	
17431887	VC11	0.80 - 1.20	250g Amber Jar (ALE210)	S	X		X		X				
			1kg TUB	S									
			60g VOC (ALE215)	S								X	
17431901	VC08	1.00 - 1.45	250g Amber Jar (ALE210)	S	X		X		X				
			1kg TUB	S									
			60g VOC (ALE215)	S								X	
17431902	VC08	0.60 - 1.00	250g Amber Jar (ALE210)	S	X		X		X				
			1kg TUB	S									
			60g VOC (ALE215)	S								X	





CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31
Location: Lowestoft

Client Reference: 62240712
Order Number: 62240712

Report Number: 457244
Superseded Report:

Results Legend

- X Test
N No Determination Possible

- Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Table with columns: Lab Sample No(s), Customer Sample Reference, AGS Reference, Depth (m), Container, Sample Type, and various test results (ANC at pH4, Anions by ion Chromatography, etc.)





# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## Results Legend

- X Test
- N No Determination Possible

Sample Types -  
 S - Soil/Solid  
 UNS - Unspecified Solid  
 GW - Ground Water  
 SW - Surface Water  
 LE - Land Leachate  
 PL - Prepared Leachate  
 PR - Process Water  
 SA - Saline Water  
 TE - Trade Effluent  
 TS - Treated Sewage  
 US - Untreated Sewage  
 RE - Recreational Water  
 DW - Drinking Water  
 Non-regulatory  
 UNL - Unspecified Liquid  
 SL - Sludge  
 G - Gas  
 OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	17431892	17431913	17431911	17431912	17431884	17431885	17431893
							VC10A	VC12A	VC12A	VC12A	VC01B	VC01B	VC09B
Metals in solid samples by OES	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
Mineral Oil	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
OC, OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
Organotins on soils*	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
PAH by GCMS	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
Passing Through >63µm sieve	All	NDPs: 1 Tests: 33				S	X	X	X	X	X	X	X
PCBs by GCMS	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
Polybrominated Diphenyl Ethers*	All	NDPs: 1 Tests: 33				S	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
Solid Content	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X
Total Dissolved Solids	All	NDPs: 0 Tests: 34				S	X	X	X	X	X	X	X





# CERTIFICATE OF ANALYSIS

Validated
-----------

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

**Results Legend**

- X Test
- N No Determination Possible

- Sample Types -**
- S - Soil/Solid
  - UNS - Unspecified Solid
  - GW - Ground Water
  - SW - Surface Water
  - LE - Land Leachate
  - PL - Prepared Leachate
  - PR - Process Water
  - SA - Saline Water
  - TE - Trade Effluent
  - TS - Treated Sewage
  - US - Untreated Sewage
  - RE - Recreational Water
  - DW - Drinking Water
  - Non-regulatory
  - UNL - Unspecified Liquid
  - SL - Sludge
  - G - Gas
  - OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container			Sample Type
					60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB	
	17431892	VC10A		2.45 - 2.85	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB	S
	17431913	VC12A		0.80 - 1.20	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB	S
	17431911	VC12A		1.80 - 2.20	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB	S
	17431912	VC12A		2.80 - 3.30	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB	S
	17431884	VC01B		0.80 - 1.20	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB	S
	17431885	VC01B		1.24 - 1.54	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB	S
	17431893	VC09B		0.80 - 1.20	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB	S
<b>Total Organic Carbon</b>	All		NDPs: 0 Tests: 34		X	X	X	X
<b>Total Sulphate</b>	All		NDPs: 0 Tests: 34		X	X	X	X
<b>TPH CWG GC (S)</b>	All		NDPs: 0 Tests: 34		X	X	X	X
<b>VOC MS (S)</b>	All		NDPs: 0 Tests: 34		X	X	X	X

17431894	VC098		1.26 - 1.66	60g VOC (ALE215)	S														
				250g Amber Jar (ALE210)	S	X													
				1kg TUB	S		X												
								X											



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## Sample Descriptions

### Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
17431914	VC02	3.20 - 3.63	Dark Brown	Silty Clay Loam	None	None
17431915	VC02	2.80 - 3.20	Dark Brown	Sandy Clay Loam	None	None
17431916	VC02	1.80 - 2.20	Dark Brown	Silty Sand	Stones	None
17431917	VC02	0.80 - 1.20	Dark Brown	Sandy Silt Loam	Stones	None
17431903	VC03	0.80 - 1.20	Grey	N/A	None	None
17431904	VC03	3.39 - 3.79	Dark Brown	Silty Sand	Stones	None
17431905	VC03	2.80 - 3.20	Dark Brown	Silty Clay Loam	None	None
17431906	VC03	1.80 - 2.20	Dark Brown	Sand	None	None
17431907	VC04	3.60 - 4.00	Light Brown	Sand	None	None
17431908	VC04	0.80 - 1.20	Light Brown	Sand	None	None
17431909	VC04	1.80 - 2.20	Light Brown	Sand	Stones	None
17431910	VC04	2.80 - 3.20	Dark Brown	Silty Sand	Stones	None
17431895	VC05	0.80 - 1.20	Dark Brown	Loamy Sand	None	None
17431896	VC05	1.80 - 2.20	Dark Brown	Sand	None	None
17431898	VC05	2.53 - 2.93	Dark Brown	Loamy Sand	Stones	None
17431899	VC06	0.80 - 1.20	Light Brown	Silty Clay Loam	Stones	Vegetation
17431900	VC06	2.00 - 2.46	Light Brown	Silty Sand	Stones	Stones
17431882	VC07	1.60 - 2.00	Cream	Sand	None	None
17431883	VC07	0.80 - 1.20	Light Brown	Sand	None	None
17431901	VC08	1.00 - 1.45	Light Brown	Silty Sand	Stones	None
17431902	VC08	0.60 - 1.00	Grey	Sand	Stones	None
17431886	VC11	1.80 - 2.20	Cream	Sand	None	None
17431887	VC11	0.80 - 1.20	Dark Brown	Loamy Sand	None	None
17431889	VC11	2.20 - 2.50	Light Brown	Sand	Stones	None
17431890	VC10A	1.80 - 2.20	Light Brown	Loamy Sand	Stones	None
17431891	VC10A	0.80 - 1.20	Dark Brown	Loamy Sand	None	None
17431892	VC10A	2.45 - 2.85	Light Brown	Sand	None	None
17431911	VC12A	1.80 - 2.20	Grey	Sand	Stones	None
17431912	VC12A	2.80 - 3.30	Grey	Sandy Loam	Stones	None
17431913	VC12A	0.80 - 1.20	Dark Brown	Silty Clay Loam	None	Oil/Petroleum
17431884	VC01B	0.80 - 1.20	Dark Brown	Sand	None	None
17431885	VC01B	1.24 - 1.54	Dark Brown	Sand	None	None
17431893	VC09B	0.80 - 1.20	Dark Brown	Sandy Loam	Stones	None
17431894	VC09B	1.26 - 1.66	Light Brown	Silty Sand	Stones	None



## CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend		Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.		15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431917	17431916	17431915	17431914	17431903	17431906
(F)	Trigger breach confirmed							
1-5&#8@	Sample deviation (see appendix)							
	AGS Reference							
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	11	14	27	22	46	20
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1	<0.1 M
2,2',3,4,4',5',6'-hexabromodiphenyl ether (BDE-138)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5',5'-hexabromodiphenyl ether (BDE-153)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5',6'-hexabromodiphenyl ether (BDE-154)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Solids, Total	<0.1 %	TBC	89	86	73	78	54	80
Loss on ignition	<0.7 %	TM018	6.24 M	<0.7 M	5.27 M	11.5 M	6.91	1.04 M
Sulphate, 2:1 water soluble	<0.002 g/l	TM019	0.0365 M	0.0109 M	0.182 M	0.117 M	0.0754	0.0147 M
Mineral oil >C10-C40	<1 mg/kg	TM061	13.2	<1	19.2	7.47	56.1	3.87
Mineral Oil Surrogate % recovery**	%	TM061	83.5	86.7	88.1	88.3	85.6	85.2
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01	<0.01 M
Organic Carbon, Total	<0.2 %	TM132	0.235 M	<0.2 M	0.78 M	0.552 M	1.37	<0.2 M
Soil Organic Matter (SOM)	<0.35 %	TM132	0.405 #	<0.35 #	1.34 #	0.952 #	2.36	<0.35 #
pH	1 pH Units	TM133	8.5 M	7.32 M	5.77 M	6.73 M	8.62	8.08 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3	<3 M



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend			Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20	
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.			15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00	14:28:00
tot.unfilt	Total / unfiltered sample.			24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
*	Subcontracted test.			180424-31	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			17431917	17431916	17431915	17431914	17431903	17431906	17431906
(F)	Trigger breach confirmed									
1-5&*&@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
PCB congener 114	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	M	
PCB congener 105	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	M	
PCB congener 126	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	M	
PCB congener 167	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	M	
PCB congener 156	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	M	
PCB congener 157	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	M	
PCB congener 169	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	M	
PCB congener 189	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	M	
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36	<36	
Arsenic	<0.6 mg/kg	TM181	4.22	3.84	37.9	15.3	19.7	3.42		
			M	M	M	M	M	M	M	
Boron	<0.7 mg/kg	TM181	4.93	<0.7	11.3	10.1	32.9	2.25		
			#	#	#	#	#	#	#	
Cadmium	<0.02 mg/kg	TM181	0.098	0.0626	0.553	1.18	0.241	0.086		
			M	M	M	M	M	M	M	
Chromium	<0.9 mg/kg	TM181	3.31	2.58	24.9	<0.9	22	5.45		
			M	M	M	M	M	M	M	
Copper	<1.4 mg/kg	TM181	4.19	3.22	29.3	12.1	25.6	2.9		
			M	M	M	M	M	M	M	
Lead	<0.7 mg/kg	TM181	7.83	2.65	31.1	13.5	31.7	4.27		
			M	M	M	M	M	M	M	
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	
			M	M	M	M	M	M	M	
Nickel	<0.2 mg/kg	TM181	4.38	3.47	35.9	21.5	23.4	3.3		
			M	M	M	M	M	M	M	
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
Zinc	<1.9 mg/kg	TM181	16	11.6	104	61.7	95.8	18.7		
			M	M	M	M	M	M	M	
ANC @ pH 4	<0.03 mol/kg	TM182	0.157	0.0613	0.101	0.0986	2.02	0.0787		
ANC @ pH 6	<0.03 mol/kg	TM182	0.0689	<0.03	<0.03	<0.03	0.227	<0.03		
Sulphate, Total	<48 mg/kg	TM221	68.8	<48	613	356	656	<48		
			M	M	M	M	M	M	M	



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend		Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
**	Subcontracted test.							
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-5&#246;	Sample deviation (see appendix)							
Component	LOD/Units	Method	VC03	VC03	VC04	VC04	VC04	VC04
Moisture Content Ratio (% of as received sample)	%	PM024	23	13	19	15	13	13
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4',5',6'-hexabromodiphenyl ether (BDE-138)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5',5'-hexabromodiphenyl ether (BDE-153)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5',6'-hexabromodiphenyl ether (BDE-154)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5'-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Solids, Total	<0.1 %	TBC	77	87	81	85	87	87
Loss on ignition	<0.7 %	TM018	9.71	<0.7	1.96	<0.7	0.854	<0.7
Sulphate, 2:1 water soluble	<0.002 g/l	TM019	0.158	0.00798	0.0369	0.016	0.0454	0.0153
Mineral oil >C10-C40	<1 mg/kg	TM061	7.57	<1	5.09	<1	<1	<1
Mineral Oil Surrogate % recovery**	%	TM061	89.4	87.2	88.4	85.6	83	86.1
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic Carbon, Total	<0.2 %	TM132	0.414	<0.2	<0.2	<0.2	<0.2	<0.2
Soil Organic Matter (SOM)	<0.35 %	TM132	0.714	<0.35	<0.35	<0.35	<0.35	<0.35
pH	1 pH Units	TM133	6.26	5.78	8.69	8.42	7.49	6.18
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1
PCB congener 28	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 52	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 101	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 118	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 138	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 153	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 180	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 77	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 123	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend			Customer Sample Ref.		VC03		VC03		VC04		VC04		VC04		VC04						
#	ISO17025 accredited.	m	mCERTS accredited.	aq	Aqueous / settled sample.	diss.filt	Dissolved / filtered sample.	tot.unfilt	Total / unfiltered sample.	*	Subcontracted test.	**	%	recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	(F)	Trigger breach confirmed	1-5&*\$@	Sample deviation (see appendix)	AGS Reference		
Component	LOD/Units	Method	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	2.80 - 3.20	Soil/Solid (S)	3.39 - 3.79	Soil/Solid (S)	0.80 - 1.20	Soil/Solid (S)	1.80 - 2.20	Soil/Solid (S)	2.80 - 3.20	Soil/Solid (S)	3.60 - 4.00	Soil/Solid (S)
PCB congener 114	<3 µg/kg	TM168			20/04/2018	14:28:00	24/04/2018	180424-31	17431905	<3	M	<3	M	<3	M	<3	M	<3	M	<3	M
PCB congener 105	<3 µg/kg	TM168			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<3	M	<3	M	<3	M	<3	M	<3	M	<3	M
PCB congener 126	<3 µg/kg	TM168			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<3	M	<3	M	<3	M	<3	M	<3	M	<3	M
PCB congener 167	<3 µg/kg	TM168			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<3	M	<3	M	<3	M	<3	M	<3	M	<3	M
PCB congener 156	<3 µg/kg	TM168			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<3	M	<3	M	<3	M	<3	M	<3	M	<3	M
PCB congener 157	<3 µg/kg	TM168			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<3	M	<3	M	<3	M	<3	M	<3	M	<3	M
PCB congener 169	<3 µg/kg	TM168			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<3	M	<3	M	<3	M	<3	M	<3	M	<3	M
PCB congener 189	<3 µg/kg	TM168			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<3	M	<3	M	<3	M	<3	M	<3	M	<3	M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<36		<36		<36		<36		<36		<36	
Arsenic	<0.6 mg/kg	TM181			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	22.4	M	1.75	M	3.4	M	1.35	M	2.74	M	0.936	M
Boron	<0.7 mg/kg	TM181			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	7.28	#	0.832	#	5.62	#	1.71	#	1.45	#	<0.7	#
Cadmium	<0.02 mg/kg	TM181			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	1.01	M	0.0378	M	0.139	M	0.0362	M	0.0528	M	<0.02	M
Chromium	<0.9 mg/kg	TM181			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<0.9	M	2.91	M	12	M	2.89	M	4.51	M	1.1	M
Copper	<1.4 mg/kg	TM181			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	8.11	M	2.9	M	10.8	M	2.29	M	5.46	M	<1.4	M
Lead	<0.7 mg/kg	TM181			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	10.9	M	4.52	M	10.2	M	3.54	M	9.64	M	3.31	M
Mercury	<0.14 mg/kg	TM181			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<0.14	M	<0.14	M	<0.14	M	<0.14	M	<0.14	M	<0.14	M
Nickel	<0.2 mg/kg	TM181			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	18.3	M	2.78	M	12.9	M	3	M	6.32	M	1.1	M
Selenium	<1 mg/kg	TM181			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	1.87	#	<1	#	<1	#	<1	#	<1	#	<1	#
Zinc	<1.9 mg/kg	TM181			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	47.5	M	9.05	M	31.6	M	8.28	M	15	M	4.24	M
ANC @ pH 4	<0.03 mol/kg	TM182			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	0.0825		0.0866		0.0799		0.0369		0.0605		0.0635	
ANC @ pH 6	<0.03 mol/kg	TM182			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	<0.03		<0.03		0.0537		<0.03		0.0388		<0.03	
Sulphate, Total	<48 mg/kg	TM221			20/04/2018	14:28:00	24/04/2018	180424-31	17431904	425	M	<48	M	<48	M	98.9	M	54.9	M	<48	M



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend		Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.		14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431895	17431896	17431898	17431899	17431900	17431883
(F)	Trigger breach confirmed							
1-5&#8@	Sample deviation (see appendix)							
	AGS Reference							
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	44	16	16	38	1.8	16
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4',5',6'-hexabromodiphenyl ether (BDE-138)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5',5'-hexabromodiphenyl ether (BDE-153)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5',6'-hexabromodiphenyl ether (BDE-154)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Solids, Total	<0.1 %	TBC	56	84	84	62	98.2	84
Loss on ignition	<0.7 %	TM018	<0.7	<0.7	2.24	<0.7	<0.7	<0.7
Sulphate, 2:1 water soluble	<0.002 g/l	TM019	0.0616	0.0221	0.0603	0.041	0.0174	0.0117
Mineral oil >C10-C40	<1 mg/kg	TM061	59.7	1.5	20.7	62.4	<1	<1
Mineral Oil Surrogate % recovery**	%	TM061	84.2	87	88.1	86	85.5	86.5
Phenol	<0.01 mg/kg	TM062 (S)	0.0179	<0.01	<0.01	<0.01	<0.01	<0.01
Organic Carbon, Total	<0.2 %	TM132	1.56	<0.2	<0.2	1.68	<0.2	<0.2
Soil Organic Matter (SOM)	<0.35 %	TM132	2.69	<0.35	<0.35	2.9	<0.35	<0.35
pH	1 pH Units	TM133	8.54	7.91	6.27	8.48	9.01	7.08
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1
PCB congener 28	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 52	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 101	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 118	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 138	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 153	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 180	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 77	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 123	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend			Customer Sample Ref.		VC05	VC05	VC05	VC06	VC06	VC07					
#	M	aq	diss.filt	tot.unfilt	*	**	(F)	1-5&S@							
									Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
									Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
									Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
									Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
									Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
									SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
									Lab Sample No.(s)	17431895	17431896	17431898	17431900	17431883	
									AGS Reference						
Component	LOD/Units	Method													
PCB congener 114	<3 µg/kg	TM168	<3	M	<3	M	<3	M	<3	M	<3	M			
PCB congener 105	<3 µg/kg	TM168	<3	M	<3	M	<3	M	<3	M	<3	M			
PCB congener 126	<3 µg/kg	TM168	<3	M	<3	M	<3	M	<3	M	<3	M			
PCB congener 167	<3 µg/kg	TM168	<3	M	<3	M	<3	M	<3	M	<3	M			
PCB congener 156	<3 µg/kg	TM168	<3	M	<3	M	<3	M	<3	M	<3	M			
PCB congener 157	<3 µg/kg	TM168	<3	M	<3	M	<3	M	<3	M	<3	M			
PCB congener 169	<3 µg/kg	TM168	<3	M	<3	M	<3	M	<3	M	<3	M			
PCB congener 189	<3 µg/kg	TM168	<3	M	<3	M	<3	M	<3	M	<3	M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36		<36		<36		<36		<36				
Arsenic	<0.6 mg/kg	TM181	21	M	3.65	M	11.4	M	18.5	M	2.21	M	<0.6	M	
Boron	<0.7 mg/kg	TM181	40.1	#	1.64	#	2.95	#	34.8	#	<0.7	#	<0.7	#	
Cadmium	<0.02 mg/kg	TM181	0.241	M	0.0879	M	0.342	M	0.282	M	0.13	M	0.0301	M	
Chromium	<0.9 mg/kg	TM181	24.7	M	1.73	M	<0.9	M	23	M	1.65	M	1.11	M	
Copper	<1.4 mg/kg	TM181	23.3	M	5.48	M	7.98	M	20.1	M	2.14	M	3.43	M	
Lead	<0.7 mg/kg	TM181	36.3	M	6.85	M	8.54	M	38.3	M	2.49	M	2.72	M	
Mercury	<0.14 mg/kg	TM181	<0.14	M	<0.14	M	<0.14	M	<0.14	M	<0.14	M	<0.14	M	
Nickel	<0.2 mg/kg	TM181	25.8	M	2.83	M	6.13	M	24.5	M	3.04	M	0.596	M	
Selenium	<1 mg/kg	TM181	<1	#	<1	#	2.68	#	<1	#	<1	#	<1	#	
Zinc	<1.9 mg/kg	TM181	105	M	15.6	M	48.1	M	98.6	M	8.13	M	4.07	M	
ANC @ pH 4	<0.03 mol/kg	TM182	2.46		0.0767		0.0849		2.13		0.0908		0.0389		
ANC @ pH 6	<0.03 mol/kg	TM182	0.247		<0.03		<0.03		0.223		<0.03		<0.03		
Sulphate, Total	<48 mg/kg	TM221	661	M	<48	M	<48	M	587	M	<48	M	<48	M	



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend		Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.		17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431882	17431902	17431901	17431887	17431886	17431889
(F)	Trigger breach confirmed							
1-5&#@	Sample deviation (see appendix)		AGS Reference					
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	13	17	14	44	15	16
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
2,2',3,4,4',5'-hexabromodiphenyl ether (BDE-138)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-153)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-154)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Solids, Total	<0.1 %	TBC	87	83	86	56	85	84
Loss on ignition	<0.7 %	TM018	<0.7 M	<0.7 M	<0.7 M	2.71 M	<0.7 M	<0.7 M
Sulphate, 2:1 water soluble	<0.002 g/l	TM019	0.0117 M	0.0155 M	0.1 M	0.0755 M	0.0135 M	0.0412 M
Mineral oil >C10-C40	<1 mg/kg	TM061	<1	1.16	<1	94	<1	<1
Mineral Oil Surrogate % recovery**	%	TM061	82.8	78.4	85.7	84.4	82.1	86
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Organic Carbon, Total	<0.2 %	TM132	<0.2 M	<0.2 M	<0.2 M	1.54 M	<0.2 M	<0.2 M
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 #	<0.35 #	<0.35 #	2.65 #	<0.35 #	<0.35 #
pH	1 pH Units	TM133	7.11 M	8.97 M	8.56 M	8.65 M	7.4 M	7.76 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend			Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.			17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
tot.unfilt	Total / unfiltered sample.			24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
*	Subcontracted test.			180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			17431882	17431902	17431901	17431887	17431886	17431889
(F)	Trigger breach confirmed								
1-5&*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
PCB congener 114	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 105	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 126	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 167	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 156	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 157	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 169	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 189	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181	0.832	1.19	<0.6	19.9	1.21	1.54	
			M	M	M	M	M	M	M
Boron	<0.7 mg/kg	TM181	1.2	<0.7	0.886	32.5	<0.7	0.906	
			#	#	#	#	#	#	#
Cadmium	<0.02 mg/kg	TM181	0.0674	<0.02	0.0247	0.277	0.0253	0.0308	
			M	M	M	M	M	M	M
Chromium	<0.9 mg/kg	TM181	1.69	2.11	1.23	25.2	1.6	1.76	
			M	M	M	M	M	M	M
Copper	<1.4 mg/kg	TM181	<1.4	1.69	<1.4	27	<1.4	2.69	
			M	M	M	M	M	M	M
Lead	<0.7 mg/kg	TM181	5.36	3.3	1.95	38.8	2.48	4.25	
			M	M	M	M	M	M	M
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	
			M	M	M	M	M	M	M
Nickel	<0.2 mg/kg	TM181	1.1	1.45	1.35	25.7	1.36	1.75	
			M	M	M	M	M	M	M
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#
Zinc	<1.9 mg/kg	TM181	4.78	6.29	3.87	117	5.66	7.5	
			M	M	M	M	M	M	M
ANC @ pH 4	<0.03 mol/kg	TM182	0.0567	0.059	0.0826	2.19	0.0715	0.0734	
ANC @ pH 6	<0.03 mol/kg	TM182	0.0353	0.0375	<0.03	0.185	0.0522	<0.03	
Sulphate, Total	<48 mg/kg	TM221	<48	<48	118	685	<48	<48	
			M	M	M	M	M	M	M





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend		Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.		09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431891	17431890	17431892	17431913	17431911	17431912
(F)	Trigger breach confirmed							
1-5&@	Sample deviation (see appendix)		AGS Reference					
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	42	13	16	42	12	18
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4',5'-hexabromodiphenyl ether (BDE-138)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-153)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,6'-hexabromodiphenyl ether (BDE-154)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
Solids, Total	<0.1 %	TBC	58	87	84	58	88	82
Loss on ignition	<0.7 %	TM018		0.728	<0.7	<0.7	<0.7	1.54
Sulphate, 2:1 water soluble	<0.002 g/l	TM019	0.0603	0.0156	0.0885	0.171	0.0107	0.0328
Mineral oil >C10-C40	<1 mg/kg	TM061	79.9	<1	12.3	184	6.49	6.2
Mineral Oil Surrogate % recovery**	%	TM061	85.7	85.5	87	84	82.2	89.9
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic Carbon, Total	<0.2 %	TM132	1.26	<0.2	<0.2	1.55	<0.2	<0.2
Soil Organic Matter (SOM)	<0.35 %	TM132	2.17	<0.35	<0.35	2.67	<0.35	<0.35
pH	1 pH Units	TM133	8.75	8.22	8.1	8.55	8.77	8.68
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1
PCB congener 28	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 52	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 101	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 118	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 138	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 153	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 180	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 77	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3
PCB congener 123	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend			Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.			09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
tot.unfilt	Total / unfiltered sample.			24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
*	Subcontracted test.			180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			17431891	17431890	17431892	17431913	17431911	17431912
(F)	Trigger breach confirmed								
1-5&*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
PCB congener 114	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 105	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 126	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 167	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 156	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 157	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 169	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
PCB congener 189	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	<3
			M	M	M	M	M	M	M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181	19	1.67	1.09	18.3	1.08	4.54	
			M	M	M	M	M	M	M
Boron	<0.7 mg/kg	TM181	37.2	0.794	0.932	28.6	1.06	4.91	
			#	#	#	#	#	#	#
Cadmium	<0.02 mg/kg	TM181	0.243	0.0515	0.0453	0.373	0.0509	0.116	
			M	M	M	M	M	M	M
Chromium	<0.9 mg/kg	TM181	24.4	1.68	1.11	24.1	1.62	14	
			M	M	M	M	M	M	M
Copper	<1.4 mg/kg	TM181	23	1.45	1.92	26.2	1.99	10.4	
			M	M	M	M	M	M	M
Lead	<0.7 mg/kg	TM181	34.1	2.97	4.31	43.7	2.5	11.9	
			M	M	M	M	M	M	M
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
			M	M	M	M	M	M	M
Nickel	<0.2 mg/kg	TM181	24.8	2.37	1.38	23	1.88	15.3	
			M	M	M	M	M	M	M
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Zinc	<1.9 mg/kg	TM181	101	8.26	10.1	125	5.35	48.6	
			M	M	M	M	M	M	M
ANC @ pH 4	<0.03 mol/kg	TM182	2.12	0.0449	0.0553	1.74	0.0497	0.0616	
ANC @ pH 6	<0.03 mol/kg	TM182	0.198	<0.03	<0.03	0.177	0.0344	0.0407	
Sulphate, Total	<48 mg/kg	TM221	529	<48	55.8	631	<48	<48	
			M	M	M	M	M	M	M



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend		Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	19/04/2018	19/04/2018		
diss.filt	Dissolved / filtered sample.		11:50:00	11:50:00	13:44:00	13:44:00		
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018		
**	Subcontracted test.		180424-31	180424-31	180424-31	180424-31		
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431884	17431885	17431893	17431894		
(F)	Trigger breach confirmed							
1-5&8@	Sample deviation (see appendix)							
	AGS Reference							
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	16	14	27	14		
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	M	M
2,2',3,4,4',5',5'-hexabromodiphenyl ether (BDE-138)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	M	M
2,2',4,4',5',5'-hexabromodiphenyl ether (BDE-153)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,2',4,4',5,6'-hexabromodiphenyl ether (BDE-154)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
Solids, Total	<0.1 %	TBC	84	86	73	86		
Loss on ignition	<0.7 %	TM018	<0.7	<0.7	13.5	<0.7	M	M
Sulphate, 2:1 water soluble	<0.002 g/l	TM019	0.0154	0.0133	0.0655	0.011	M	M
Mineral oil >C10-C40	<1 mg/kg	TM061	<1	<1	8.36	<1		
Mineral Oil Surrogate % recovery**	%	TM061	82.8	85.9	86.1	85.1		
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01	M	M
Organic Carbon, Total	<0.2 %	TM132	<0.2	<0.2	0.327	<0.2	M	M
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35	<0.35	0.564	<0.35	#	#
pH	1 pH Units	TM133	8.28	7.93	6.15	6.64	M	M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<0.6	#	#
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1	<1	M	M
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	<1	M	M
PCB congener 28	<3 µg/kg	TM168	<3	<3	<3	<3	M	M
PCB congener 52	<3 µg/kg	TM168	<3	<3	<3	<3	M	M
PCB congener 101	<3 µg/kg	TM168	<3	<3	<3	<3	M	M
PCB congener 118	<3 µg/kg	TM168	<3	<3	<3	<3	M	M
PCB congener 138	<3 µg/kg	TM168	<3	<3	<3	<3	M	M
PCB congener 153	<3 µg/kg	TM168	<3	<3	<3	<3	M	M
PCB congener 180	<3 µg/kg	TM168	<3	<3	<3	<3	M	M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21		
PCB congener 81	<3 µg/kg	TM168	<3	<3	<3	<3	M	M
PCB congener 77	<3 µg/kg	TM168	<3	<3	<3	<3	M	M
PCB congener 123	<3 µg/kg	TM168	<3	<3	<3	<3	M	M



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Results Legend		Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
#	ISO17025 accredited.							
M	mCERTS accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Sample Time</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b> <b>AGS Reference</b>	0.80 - 1.20 Soil/Solid (S) 20/04/2018 11:50:00 24/04/2018 180424-31 17431884	1.24 - 1.54 Soil/Solid (S) 20/04/2018 11:50:00 24/04/2018 180424-31 17431885	0.80 - 1.20 Soil/Solid (S) 19/04/2018 13:44:00 24/04/2018 180424-31 17431893	1.26 - 1.66 Soil/Solid (S) 19/04/2018 13:44:00 24/04/2018 180424-31 17431894		
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-5&\$@	Sample deviation (see appendix)							
Component	LOD/Units						Method	
PCB congener 114	<3 µg/kg	TM168	<3	<3	<3	<3		
			M	M	M	M		
PCB congener 105	<3 µg/kg	TM168	<3	<3	<3	<3		
			M	M	M	M		
PCB congener 126	<3 µg/kg	TM168	<3	<3	<3	<3		
			M	M	M	M		
PCB congener 167	<3 µg/kg	TM168	<3	<3	<3	<3		
			M	M	M	M		
PCB congener 156	<3 µg/kg	TM168	<3	<3	<3	<3		
			M	M	M	M		
PCB congener 157	<3 µg/kg	TM168	<3	<3	<3	<3		
			M	M	M	M		
PCB congener 169	<3 µg/kg	TM168	<3	<3	<3	<3		
			M	M	M	M		
PCB congener 189	<3 µg/kg	TM168	<3	<3	<3	<3		
			M	M	M	M		
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36		
Arsenic	<0.6 mg/kg	TM181	2.24	1.32	36.1	0.703		
			M	M	M	M		
Boron	<0.7 mg/kg	TM181	0.867	0.755	7.58	<0.7		
			#	#	#	#		
Cadmium	<0.02 mg/kg	TM181	0.0375	0.0435	1.98	0.0321		
			M	M	M	M		
Chromium	<0.9 mg/kg	TM181	2.16	1.69	<0.9	1.65		
			M	M	M	M		
Copper	<1.4 mg/kg	TM181	5.08	26.9	3.79	<1.4		
			M	M	M	M		
Lead	<0.7 mg/kg	TM181	4.42	9.04	11.3	2.34		
			M	M	M	M		
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14		
			M	M	M	M		
Nickel	<0.2 mg/kg	TM181	2.44	2.24	14.7	1.16		
			M	M	M	M		
Selenium	<1 mg/kg	TM181	<1	<1	3.05	<1		
			#	#	#	#		
Zinc	<1.9 mg/kg	TM181	9.08	15.3	47.2	6.75		
			M	M	M	M		
ANC @ pH 4	<0.03 mol/kg	TM182	0.08	0.0475	0.104	0.0853		
ANC @ pH 6	<0.03 mol/kg	TM182	0.0318	0.0324	<0.03	<0.03		
Sulphate, Total	<48 mg/kg	TM221	<48	<48	172	<48		
			M	M	M	M		



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## OC, OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
M	mCERTS accredited.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
aq	Aqueous / settled sample.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
diss.filt	Dissolved / filtered sample.		15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431917	17431916	17431915	17431914	17431903	17431906
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method	AGS Reference				
Tecnazene	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Hexachlorobenzene	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Trifluralin	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Phorate	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Quintozene (PCNB)	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Triallate	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Disulfoton	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Heptachlor	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Aldrin	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Chlorothalonil	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Telodrin	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Isodrin	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Heptachlor epoxide	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Triadimefon	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Pendimethalin	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
o,p'-DDE	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Endosulphan I	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Trans-chlordane	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
cis-Chlordane	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
p,p'-DDE	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Dieldrin	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Endrin	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
o,p'-DDT	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
p,p'-TDE (DDD)	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Endosulphan II	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
p,p'-DDT	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
o,p'-Methoxychlor	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
p,p'-Methoxychlor	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Endosulphan sulphate	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## OC, OP Pesticides and Triazine Herb

Component	LOD/Units	Method	VC02	VC02	VC02	VC02	VC03	VC03
Permethrin I	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50
Permethrin II	<50 µg/kg	TM073	<50	<50	<50	<50	<250	<50



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## OC, OP Pesticides and Triazine Herb

#	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
<div style="font-size: small;"> <b>Results Legend</b>            # ISO17025 accredited.            M mCERTS accredited.            aq Aqueous / settled sample.            diss.filt Dissolved / filtered sample.            tot.unfilt Total / unfiltered sample.            * Subcontracted test.            ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery            (F) Trigger breach confirmed            1-5&amp;*\$@ Sample deviation (see appendix)         </div>							
<div style="font-size: x-small;"> <b>AGS Reference</b>            Depth (m)                      2.80 - 3.20                      3.39 - 3.79                      0.80 - 1.20                      1.80 - 2.20                      2.80 - 3.20                      3.60 - 4.00            Sample Type                    Soil/Solid (S)                    Soil/Solid (S)                    Soil/Solid (S)                    Soil/Solid (S)                    Soil/Solid (S)                    Soil/Solid (S)            Date Sampled                    20/04/2018                      20/04/2018                      19/04/2018                      19/04/2018                      19/04/2018                      19/04/2018            Sample Time                      14:28:00                        14:28:00                        15:50:00                        15:50:00                        15:50:00                        15:50:00            Date Received                    24/04/2018                      24/04/2018                      24/04/2018                      24/04/2018                      24/04/2018                      24/04/2018            SDG Ref                            180424-31                        180424-31                        180424-31                        180424-31                        180424-31                        180424-31            Lab Sample No.(s)                17431905                        17431904                        17431908                        17431909                        17431910                        17431907         </div>							
Component	LOD/Units	Method	Method	Method	Method	Method	Method
Tecnazene	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Hexachlorobenzene	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Trifluralin	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Phorate	<50 µg/kg	TM073	<50	<50	<50	<50	<50
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Quintozene (PCNB)	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Triallate	<50 µg/kg	TM073	<50	<50	<50	<50	<50
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Disulfoton	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Heptachlor	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Aldrin	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Chlorothalonil	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Telodrin	<50 µg/kg	TM073	<50	<50	<50	<50	<50
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Isodrin	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Heptachlor epoxide	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Triadimefon	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Pendimethalin	<50 µg/kg	TM073	<50	<50	<50	<50	<50
o,p'-DDE	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Endosulphan I	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Trans-chlordane	<50 µg/kg	TM073	<50	<50	<50	<50	<50
cis-Chlordane	<50 µg/kg	TM073	<50	<50	<50	<50	<50
p,p'-DDE	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Dieldrin	<50 µg/kg	TM073	<50	<50	<50	<50	<50
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Endrin	<50 µg/kg	TM073	<50	<50	<50	<50	<50
o,p'-DDT	<50 µg/kg	TM073	<50	<50	<50	<50	<50
p,p'-TDE (DDD)	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Endosulphan II	<50 µg/kg	TM073	<50	<50	<50	<50	<50
p,p'-DDT	<50 µg/kg	TM073	<50	<50	<50	<50	<50
o,p'-Methoxychlor	<50 µg/kg	TM073	<50	<50	<50	<50	<50
p,p'-Methoxychlor	<50 µg/kg	TM073	<50	<50	<50	<50	<50
Endosulphan sulphate	<50 µg/kg	TM073	<50	<50	<50	<50	<50



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
 Location: Lowestoft

Client Reference: 62240712  
 Order Number: 62240712

Report Number: 457244  
 Superseded Report:

## OC, OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	VC03		VC04		VC04		VC04	
#	M		Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
	aq		2.80 - 3.20	Soil/Solid (S)	20/04/2018	14:28:00	180424-31	17431905		
	diss.filt		3.39 - 3.79	Soil/Solid (S)	20/04/2018	14:28:00	180424-31	17431904		
	tot.unfilt		0.80 - 1.20	Soil/Solid (S)	19/04/2018	15:50:00	180424-31	17431908		
	*		1.80 - 2.20	Soil/Solid (S)	19/04/2018	15:50:00	180424-31	17431909		
	**		2.80 - 3.20	Soil/Solid (S)	19/04/2018	15:50:00	180424-31	17431910		
	(F)		3.60 - 4.00	Soil/Solid (S)	19/04/2018	15:50:00	180424-31	17431907		
	1-5&*S@									
Component	LOD/Units	Method								
Permethrin I	<50 µg/kg	TM073	<50	<50	<50	<50	<50	<50	<50	<50
Permethrin II	<50 µg/kg	TM073	<50	<50	<50	<50	<50	<50	<50	<50





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## OC, OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07		
#	ISO17025 accredited.									
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
**	Subcontracted test.									
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-5&*\$@	Sample deviation (see appendix)									
Component	LOD/Units	Method	AGS Reference	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)
Tecnazene	<50 µg/kg	TM073		0.80 - 1.20	Soil/Solid (S)	19/04/2018	14:45:00	24/04/2018	180424-31	17431895
Hexachlorobenzene	<50 µg/kg	TM073		1.80 - 2.20	Soil/Solid (S)	19/04/2018	14:45:00	24/04/2018	180424-31	17431896
Trifluralin	<50 µg/kg	TM073		2.53 - 2.93	Soil/Solid (S)	19/04/2018	14:45:00	24/04/2018	180424-31	17431898
Phorate	<50 µg/kg	TM073		0.80 - 1.20	Soil/Solid (S)	20/04/2018	08:29:00	24/04/2018	180424-31	17431899
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		2.00 - 2.46	Soil/Solid (S)	20/04/2018	08:29:00	24/04/2018	180424-31	17431900
Quintozene (PCNB)	<50 µg/kg	TM073		0.80 - 1.20	Soil/Solid (S)	20/04/2018	17:40:00	24/04/2018	180424-31	17431883
Triallate	<50 µg/kg	TM073								
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073								
Disulfoton	<50 µg/kg	TM073								
Heptachlor	<50 µg/kg	TM073								
Aldrin	<50 µg/kg	TM073								
Chlorothalonil	<50 µg/kg	TM073								
Telodrin	<50 µg/kg	TM073								
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073								
Isodrin	<50 µg/kg	TM073								
Heptachlor epoxide	<50 µg/kg	TM073								
Triadimefon	<50 µg/kg	TM073								
Pendimethalin	<50 µg/kg	TM073								
o,p'-DDE	<50 µg/kg	TM073								
Endosulphan I	<50 µg/kg	TM073								
Trans-chlordane	<50 µg/kg	TM073								
cis-Chlordane	<50 µg/kg	TM073								
p,p'-DDE	<50 µg/kg	TM073								
Dieldrin	<50 µg/kg	TM073								
o,p'-DDD (TDE)	<50 µg/kg	TM073								
Endrin	<50 µg/kg	TM073								
o,p'-DDT	<50 µg/kg	TM073								
p,p'-TDE (DDD)	<50 µg/kg	TM073								
Endosulphan II	<50 µg/kg	TM073								
p,p'-DDT	<50 µg/kg	TM073								
o,p'-Methoxychlor	<50 µg/kg	TM073								
p,p'-Methoxychlor	<50 µg/kg	TM073								
Endosulphan sulphate	<50 µg/kg	TM073								



### CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

#### OC, OP Pesticides and Triazine Herb

<b>Results Legend</b> # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-5&*\$@ Sample deviation (see appendix)	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference	VC05	VC05	VC05	VC06	VC06	VC07
										0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
										Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Component	LOD/Units	Method													
										<250	<50	<50	<250	<50	<50
Permethrin I	<50 µg/kg	TM073													
Permethrin II	<50 µg/kg	TM073								<250	<50	<50	<250	<50	<50



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## OC, OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
tot.unfilt	Total / unfiltered sample.	Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
**	Subcontracted test.	Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
(F)	Trigger breach confirmed	SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
1-5&*\$@	Sample deviation (see appendix)	Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
Component	LOD/Units	Method	AGS Reference					
Tecnazene	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Hexachlorobenzene	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Trifluralin	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Phorate	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Quintozene (PCNB)	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Triallate	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Disulfoton	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Heptachlor	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Aldrin	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Chlorothalonil	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Telodrin	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Isodrin	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Heptachlor epoxide	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Triadimefon	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Pendimethalin	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
o,p'-DDE	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Endosulphan I	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Trans-chlordane	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
cis-Chlordane	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
p,p'-DDE	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Dieldrin	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Endrin	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
o,p'-DDT	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
p,p'-TDE (DDD)	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Endosulphan II	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
p,p'-DDT	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
o,p'-Methoxychlor	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
p,p'-Methoxychlor	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Endosulphan sulphate	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
 Location: Lowestoft

Client Reference: 62240712  
 Order Number: 62240712

Report Number: 457244  
 Superseded Report:

## OC, OP Pesticides and Triazine Herb

#	Results Legend	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
M	ISO17025 accredited.	Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
aq	mCERTS accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
diss.filt	Aqueous / settled sample.	Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
tot.unfilt	Dissolved / filtered sample.	Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
*	Total / unfiltered sample.	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.	SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
(F)	Trigger breach confirmed	AGS Reference						
1-5&*S@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Permethrin I	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50
Permethrin II	<50 µg/kg	TM073	<50	<50	<50	<250	<50	<50



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## OC, OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A		
#	ISO17025 accredited.									
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
**	Subcontracted test.									
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-5&*\$@	Sample deviation (see appendix)									
Component	LOD/Units	Method	AGS Reference	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)
Tecnazene	<50 µg/kg	TM073		0.80 - 1.20	Soil/Solid (S)	20/04/2018	09:24:00	24/04/2018	180424-31	17431891
Hexachlorobenzene	<50 µg/kg	TM073		1.80 - 2.20	Soil/Solid (S)	20/04/2018	09:24:00	24/04/2018	180424-31	17431890
Trifluralin	<50 µg/kg	TM073		2.45 - 2.85	Soil/Solid (S)	20/04/2018	09:24:00	24/04/2018	180424-31	17431892
Phorate	<50 µg/kg	TM073		0.80 - 1.20	Soil/Solid (S)	20/04/2018	13:27:00	24/04/2018	180424-31	17431913
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		1.80 - 2.20	Soil/Solid (S)	20/04/2018	13:27:00	24/04/2018	180424-31	17431911
Quintozene (PCNB)	<50 µg/kg	TM073		2.80 - 3.30	Soil/Solid (S)	20/04/2018	13:27:00	24/04/2018	180424-31	17431912
Triallate	<50 µg/kg	TM073								
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073								
Disulfoton	<50 µg/kg	TM073								
Heptachlor	<50 µg/kg	TM073								
Aldrin	<50 µg/kg	TM073								
Chlorothalonil	<50 µg/kg	TM073								
Telodrin	<50 µg/kg	TM073								
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073								
Isodrin	<50 µg/kg	TM073								
Heptachlor epoxide	<50 µg/kg	TM073								
Triadimefon	<50 µg/kg	TM073								
Pendimethalin	<50 µg/kg	TM073								
o,p'-DDE	<50 µg/kg	TM073								
Endosulphan I	<50 µg/kg	TM073								
Trans-chlordane	<50 µg/kg	TM073								
cis-Chlordane	<50 µg/kg	TM073								
p,p'-DDE	<50 µg/kg	TM073								
Dieldrin	<50 µg/kg	TM073								
o,p'-DDD (TDE)	<50 µg/kg	TM073								
Endrin	<50 µg/kg	TM073								
o,p'-DDT	<50 µg/kg	TM073								
p,p'-TDE (DDD)	<50 µg/kg	TM073								
Endosulphan II	<50 µg/kg	TM073								
p,p'-DDT	<50 µg/kg	TM073								
o,p'-Methoxychlor	<50 µg/kg	TM073								
p,p'-Methoxychlor	<50 µg/kg	TM073								
Endosulphan sulphate	<50 µg/kg	TM073								



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## OC, OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Sample Time</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b> <b>AGS Reference</b>	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.		09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
*	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431891	17431890	17431892	17431913	17431911	17431912
(F)	Trigger breach confirmed							
1-5&S@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Permethrin I	<50 µg/kg	TM073	<250	<50	<50	<250	<50	<50
Permethrin II	<50 µg/kg	TM073	<250	<50	<50	<250	<50	<50



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## OC, OP Pesticides and Triazine Herb

#	Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
<div style="font-size: small;"> <b>Results Legend</b>            # ISO17025 accredited.            M mCERTS accredited.            aq Aqueous / settled sample.            diss.filt Dissolved / filtered sample.            tot.unfilt Total / unfiltered sample.            * Subcontracted test.            ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery            (F) Trigger breach confirmed            1-5&amp;*\$@ Sample deviation (see appendix)         </div>							
		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20 Soil/Solid (S) 20/04/2018 11:50:00 24/04/2018 180424-31 17431884	1.24 - 1.54 Soil/Solid (S) 20/04/2018 11:50:00 24/04/2018 180424-31 17431885	0.80 - 1.20 Soil/Solid (S) 19/04/2018 13:44:00 24/04/2018 180424-31 17431893	1.26 - 1.66 Soil/Solid (S) 19/04/2018 13:44:00 24/04/2018 180424-31 17431894	
Component	LOD/Units	Method	AGS Reference				
Tecnazene	<50 µg/kg	TM073		<50	<50	<50	<50
Hexachlorobenzene	<50 µg/kg	TM073		<50	<50	<50	<50
Trifluralin	<50 µg/kg	TM073		<50	<50	<50	<50
Phorate	<50 µg/kg	TM073		<50	<50	<50	<50
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50	<50	<50	<50
Quintozone (PCNB)	<50 µg/kg	TM073		<50	<50	<50	<50
Triallate	<50 µg/kg	TM073		<50	<50	<50	<50
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073		<50	<50	<50	<50
Disulfoton	<50 µg/kg	TM073		<50	<50	<50	<50
Heptachlor	<50 µg/kg	TM073		<50	<50	<50	<50
Aldrin	<50 µg/kg	TM073		<50	<50	<50	<50
Chlorothalonil	<50 µg/kg	TM073		<50	<50	<50	<50
Telodrin	<50 µg/kg	TM073		<50	<50	<50	<50
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50	<50	<50	<50
Isodrin	<50 µg/kg	TM073		<50	<50	<50	<50
Heptachlor epoxide	<50 µg/kg	TM073		<50	<50	<50	<50
Triadimefon	<50 µg/kg	TM073		<50	<50	<50	<50
Pendimethalin	<50 µg/kg	TM073		<50	<50	<50	<50
o,p-DDE	<50 µg/kg	TM073		<50	<50	<50	<50
Endosulphan I	<50 µg/kg	TM073		<50	<50	<50	<50
Trans-chlordane	<50 µg/kg	TM073		<50	<50	<50	<50
cis-Chlordane	<50 µg/kg	TM073		<50	<50	<50	<50
p,p-DDE	<50 µg/kg	TM073		<50	<50	<50	<50
Dieldrin	<50 µg/kg	TM073		<50	<50	<50	<50
o,p'-DDD (TDE)	<50 µg/kg	TM073		<50	<50	<50	<50
Endrin	<50 µg/kg	TM073		<50	<50	<50	<50
o,p-DDT	<50 µg/kg	TM073		<50	<50	<50	<50
p,p-TDE (DDD)	<50 µg/kg	TM073		<50	<50	<50	<50
Endosulphan II	<50 µg/kg	TM073		<50	<50	<50	<50
p,p-DDT	<50 µg/kg	TM073		<50	<50	<50	<50
o,p-Methoxychlor	<50 µg/kg	TM073		<50	<50	<50	<50
p,p-Methoxychlor	<50 µg/kg	TM073		<50	<50	<50	<50
Endosulphan sulphate	<50 µg/kg	TM073		<50	<50	<50	<50



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

**OC, OP Pesticides and Triazine Herb**

Results Legend			Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted test.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		<b>Depth (m)</b>	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
(F)	Trigger breach confirmed		<b>Sample Type</b>	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
1-5&*&\$@	Sample deviation (see appendix)		<b>Date Sampled</b>	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
			<b>Sample Time</b>	11:50:00	11:50:00	13:44:00	13:44:00		
			<b>Date Received</b>	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
			<b>SDG Ref</b>	180424-31	180424-31	180424-31	180424-31		
			<b>Lab Sample No.(s)</b>	17431884	17431885	17431893	17431894		
			<b>AGS Reference</b>						
Component	LOD/Units	Method							
Permethrin I	<50 µg/kg	TM073		<50	<50	<50	<50		
Permethrin II	<50 µg/kg	TM073		<50	<50	<50	<50		





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## Organotins on soils\*

Results Legend			Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03						
#	M	aq	diss.filt	tot.unfilt	* *	(F)	1-5&*\$@								
<b>ISO17025 accredited.</b> <i>m</i> CERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted test. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed							Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)			0.80 - 1.20 Soil/Solid (S) 20/04/2018 15:43:00 24/04/2018 180424-31 17431917	1.80 - 2.20 Soil/Solid (S) 20/04/2018 15:43:00 24/04/2018 180424-31 17431916	2.80 - 3.20 Soil/Solid (S) 20/04/2018 15:43:00 24/04/2018 180424-31 17431915	3.20 - 3.63 Soil/Solid (S) 20/04/2018 15:43:00 24/04/2018 180424-31 17431914	0.80 - 1.20 Soil/Solid (S) 20/04/2018 14:28:00 24/04/2018 180424-31 17431903	1.80 - 2.20 Soil/Solid (S) 20/04/2018 14:28:00 24/04/2018 180424-31 17431906
Component	LOD/Units	Method	AGS Reference												
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
Triphenyl Tin*	mg/kg	SUB		<0.05	<0.05	<0.05	<0.5	<0.05	<0.05						
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.01						
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						



# CERTIFICATE OF ANALYSIS

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## Organotins on soils\*

Results Legend		Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
tot.unfilt	Total / unfiltered sample.	Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
*	Subcontracted test.	Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
(F)	Trigger breach confirmed	SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
1-5&*S@	Sample deviation (see appendix)	Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
Component		LOD/Units	Method	AGS Reference				
Dibutyl Tin*	mg/kg	SUB	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tributyl Tin*	mg/kg	SUB	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Triphenyl Tin*	mg/kg	SUB	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrabutyl Tin*	mg/kg	SUB	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Monobutyl Tin*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Monophenyl Tin*	mg/kg	SUB	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Diphenyl Tin*	mg/kg	SUB	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02



CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31
Location: Lowestoft

Client Reference: 62240712
Order Number: 62240712

Report Number: 457244
Superseded Report:

Organotins on soils\*

Table with 10 columns: Component, LOD/Units, Method, and seven VC05-VC07 columns. Rows include organotin compounds like Dibutyl Tin, Tributyl Tin, Triphenyl Tin, Tetrabutyl Tin, Monobutyl Tin, Monophenyl Tin, and Diphenyl Tin, with values mostly <0.02 or <0.1 mg/kg.



# CERTIFICATE OF ANALYSIS

Validated
-----------

SDG: 180424-31  
 Location: Lowestoft

Client Reference: 62240712  
 Order Number: 62240712

Report Number: 457244  
 Superseded Report:

## Organotins on soils\*

#	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
<b>Results Legend</b> # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed							
<b>1-5&amp;*\$@ Sample deviation (see appendix)</b>							
	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	1.60 - 2.00 Soil/Solid (S) 20/04/2018 17:40:00 24/04/2018 180424-31 17431882	0.60 - 1.00 Soil/Solid (S) 20/04/2018 17:06:00 24/04/2018 180424-31 17431902	1.00 - 1.45 Soil/Solid (S) 20/04/2018 17:06:00 24/04/2018 180424-31 17431901	0.80 - 1.20 Soil/Solid (S) 20/04/2018 12:24:00 24/04/2018 180424-31 17431887	1.80 - 2.20 Soil/Solid (S) 20/04/2018 12:24:00 24/04/2018 180424-31 17431886	2.20 - 2.50 Soil/Solid (S) 20/04/2018 12:24:00 24/04/2018 180424-31 17431889
Component	LOD/Units	Method					
Dibutyl Tin*	mg/kg	SUB	<0.02	<0.02	<0.02	<0.02	<0.02
Tributyl Tin*	mg/kg	SUB	<0.02	<0.02	<0.02	0.06	<0.02
Triphenyl Tin*	mg/kg	SUB	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrabutyl Tin*	mg/kg	SUB	<0.02	<0.02	<0.02	<0.02	<0.02
Monobutyl Tin*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1	<0.1
Monophenyl Tin*	mg/kg	SUB	<0.02	<0.02	<0.02	<0.02	<0.02
Diphenyl Tin*	mg/kg	SUB	<0.02	<0.02	<0.02	<0.02	<0.02



CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31
Location: Lowestoft

Client Reference: 62240712
Order Number: 62240712

Report Number: 457244
Superseded Report:

Organotins on soils\*

Table with columns: Results Legend, Customer Sample Ref., VC10A, VC10A, VC10A, VC12A, VC12A, VC12A. Rows include Dibutyl Tin, Tributyl Tin, Triphenyl Tin, Tetra-butyl Tin, Monobutyl Tin, Monophenyl Tin, Diphenyl Tin, and multiple empty rows.



CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31
Location: Lowestoft

Client Reference: 62240712
Order Number: 62240712

Report Number: 457244
Superseded Report:

Organotins on soils\*

Table with 9 columns: Results Legend, Customer Sample Ref., VC01B, VC01B, VC09B, VC09B, Component, LOD/Units, Method. Rows include Dibutyl Tin\*, Tributyl Tin\*, Triphenyl Tin\*, Tetra-butyl Tin\*, Monobutyl Tin\*, Monophenyl Tin\*, Diphenyl Tin\* with corresponding values like mg/kg and SUB.



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## PAH by GCMS

Results Legend		Customer Sample Ref.	VC02		VC02		VC03		VC03	
#	ISO17025 accredited.		Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20	
M	mCERTS accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
aq	Aqueous / settled sample.	Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	
diss.filt	Dissolved / filtered sample.	Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00	14:28:00	
tot.unfilt	Total / unfiltered sample.	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	
**	Subcontracted test.	SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906	17431906	
(F)	Trigger breach confirmed	AGS Reference								
1-5&S@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Naphthalene-d8 % recovery**	%	TM218	109	109	100	108	110	106		
Acenaphthene-d10 % recovery**	%	TM218	103	102	97	108	111	107		
Phenanthrene-d10 % recovery**	%	TM218	104	102	99	106	108	105		
Chrysene-d12 % recovery**	%	TM218	90.9	87.4	97.9	93	96.2	98.5		
Perylene-d12 % recovery**	%	TM218	82.4	82.9	93.8	99.2	102	109		
Naphthalene	<9 µg/kg	TM218	<9	<9	<9	<9	49.1	<9		
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	<12	<12	<12		
Acenaphthene	<8 µg/kg	TM218	<8	<8	<8	<8	46	<8		
Fluorene	<10 µg/kg	TM218	<10	<10	<10	<10	36.1	<10		
Phenanthrene	<15 µg/kg	TM218	<15	<15	<15	<15	140	<15		
Anthracene	<16 µg/kg	TM218	<16	<16	<16	<16	72.3	<16		
Fluoranthene	<17 µg/kg	TM218	27.8	<17	<17	<17	270	<17		
Pyrene	<15 µg/kg	TM218	22.8	<15	<15	<15	218	<15		
Benz(a)anthracene	<14 µg/kg	TM218	<14	<14	<14	<14	79.9	<14		
Chrysene	<10 µg/kg	TM218	<10	<10	<10	<10	63	<10		
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15	<15	<15	109	<15		
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	<14	<14	38.2	<14		
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15	<15	<15	57.8	<15		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	<18	<18	39.9	<18		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	<23	<23	<23		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24	<24	<24	55	<24		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	1270	<118		
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218	<10	<10	<10	<10	<10	<10		



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## PAH by GCMS

Results Legend		Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
#	ISO17025 accredited.		2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
M	mCERTS accredited.	Depth (m)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.	Sample Type	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
diss.filt	Dissolved / filtered sample.	Date Sampled	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
tot.unfilt	Total / unfiltered sample.	Sample Time	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.	Date Received	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	SDG Ref	17431905	17431904	17431908	17431909	17431910	17431907
(F)	Trigger breach confirmed	Lab Sample No.(s)	AGS Reference					
1-5&*&@	Sample deviation (see appendix)	Method						
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	105	97.7	92.1	108	95	109
Acenaphthene-d10 % recovery**	%	TM218	104	101	95.8	101	98.4	102
Phenanthrene-d10 % recovery**	%	TM218	103	102	95.9	102	98	103
Chrysene-d12 % recovery**	%	TM218	92.1	87.9	82.9	88.1	82.9	89.8
Perylene-d12 % recovery**	%	TM218	99.4	86.6	80	77.4	76.5	81.2
Naphthalene	<9 µg/kg	TM218	<9	<9	<9	<9	<9	<9
			M	M	M	M	M	M
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	<12	<12	<12
			M	M	M	M	M	M
Acenaphthene	<8 µg/kg	TM218	<8	<8	<8	<8	<8	<8
			M	M	M	M	M	M
Fluorene	<10 µg/kg	TM218	<10	<10	<10	<10	<10	<10
			M	M	M	M	M	M
Phenanthrene	<15 µg/kg	TM218	<15	<15	<15	<15	<15	<15
			M	M	M	M	M	M
Anthracene	<16 µg/kg	TM218	<16	<16	<16	<16	<16	<16
			M	M	M	M	M	M
Fluoranthene	<17 µg/kg	TM218	<17	<17	<17	<17	<17	<17
			M	M	M	M	M	M
Pyrene	<15 µg/kg	TM218	<15	<15	<15	<15	<15	<15
			M	M	M	M	M	M
Benz(a)anthracene	<14 µg/kg	TM218	<14	<14	<14	<14	<14	<14
			M	M	M	M	M	M
Chrysene	<10 µg/kg	TM218	<10	<10	<10	<10	<10	<10
			M	M	M	M	M	M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15	<15	<15	<15	<15
			M	M	M	M	M	M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	<14	<14	<14	<14
			M	M	M	M	M	M
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15	<15	<15	<15	<15
			M	M	M	M	M	M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	<18	<18	<18	<18
			M	M	M	M	M	M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	<23	<23	<23
			M	M	M	M	M	M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24	<24	<24	<24	<24
			M	M	M	M	M	M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218	<10	<10	<10	<10	<10	<10





# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## PAH by GCMS

Results Legend		Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20 Soil/Solid (S) 19/04/2018 14:45:00 24/04/2018 180424-31 17431895	1.80 - 2.20 Soil/Solid (S) 19/04/2018 14:45:00 24/04/2018 180424-31 17431896	2.53 - 2.93 Soil/Solid (S) 19/04/2018 14:45:00 24/04/2018 180424-31 17431898	0.80 - 1.20 Soil/Solid (S) 20/04/2018 08:29:00 24/04/2018 180424-31 17431899	2.00 - 2.46 Soil/Solid (S) 20/04/2018 08:29:00 24/04/2018 180424-31 17431900	0.80 - 1.20 Soil/Solid (S) 20/04/2018 17:40:00 24/04/2018 180424-31 17431883
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-5&S@	Sample deviation (see appendix)							
	AGS Reference							
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	103	105	106	104	103	92.9
Acenaphthene-d10 % recovery**	%	TM218	98.5	99.5	99.7	99.5	100	97.8
Phenanthrene-d10 % recovery**	%	TM218	103	101	99.9	104	97.5	102
Chrysene-d12 % recovery**	%	TM218	97.1	97.1	87	92.8	91.1	92.6
Perylene-d12 % recovery**	%	TM218	106	104	76.5	91.9	89.8	100
Naphthalene	<9 µg/kg	TM218	36.8	<9	<9	37.1	<9	<9
			M	M	M	M	M	M
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	<12	<12	<12
			M	M	M	M	M	M
Acenaphthene	<8 µg/kg	TM218	<8	<8	<8	13.9	<8	<8
			M	M	M	M	M	M
Fluorene	<10 µg/kg	TM218	<10	<10	<10	17.4	<10	<10
			M	M	M	M	M	M
Phenanthrene	<15 µg/kg	TM218	73	<15	<15	70.6	<15	<15
			M	M	M	M	M	M
Anthracene	<16 µg/kg	TM218	<16	<16	<16	<16	<16	<16
			M	M	M	M	M	M
Fluoranthene	<17 µg/kg	TM218	144	<17	<17	105	<17	<17
			M	M	M	M	M	M
Pyrene	<15 µg/kg	TM218	119	<15	<15	83.9	<15	<15
			M	M	M	M	M	M
Benz(a)anthracene	<14 µg/kg	TM218	55.5	<14	<14	33.2	<14	<14
			M	M	M	M	M	M
Chrysene	<10 µg/kg	TM218	46.1	<10	<10	35.3	<10	<10
			M	M	M	M	M	M
Benzo(b)fluoranthene	<15 µg/kg	TM218	81.6	<15	<15	56.1	<15	<15
			M	M	M	M	M	M
Benzo(k)fluoranthene	<14 µg/kg	TM218	35.5	<14	<14	<14	<14	<14
			M	M	M	M	M	M
Benzo(a)pyrene	<15 µg/kg	TM218	49.6	<15	<15	29.9	<15	<15
			M	M	M	M	M	M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	<18	<18	<18	<18
			M	M	M	M	M	M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	<23	<23	<23
			M	M	M	M	M	M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	49	<24	<24	<24	<24	<24
			M	M	M	M	M	M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	690	<118	<118	483	<118	<118
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218	<10	<10	<10	<10	<10	<10



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## PAH by GCMS

Results Legend		Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
#	ISO17025 accredited.		Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20
M	mCERTS accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.	Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.	Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
tot.unfilt	Total / unfiltered sample.	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.	SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
(F)	Trigger breach confirmed	AGS Reference						
1-5&*&@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	112	107	95.3	108	112	103
Acenaphthene-d10 % recovery**	%	TM218	104	107	99.3	103	105	107
Phenanthrene-d10 % recovery**	%	TM218	105	105	100	107	106	109
Chrysene-d12 % recovery**	%	TM218	95.4	94.7	85.6	103	95	112
Perylene-d12 % recovery**	%	TM218	99.6	101	73.7	114	85.6	127
Naphthalene	<9 µg/kg	TM218	<9	<9	<9	85.7	<9	<9
			M	M	M	M	M	M
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	<12	<12	<12
			M	M	M	M	M	M
Acenaphthene	<8 µg/kg	TM218	<8	<8	<8	49.9	<8	<8
			M	M	M	M	M	M
Fluorene	<10 µg/kg	TM218	<10	<10	<10	39.6	<10	<10
			M	M	M	M	M	M
Phenanthrene	<15 µg/kg	TM218	<15	<15	<15	97.6	<15	<15
			M	M	M	M	M	M
Anthracene	<16 µg/kg	TM218	<16	<16	<16	57.7	<16	<16
			M	M	M	M	M	M
Fluoranthene	<17 µg/kg	TM218	<17	<17	<17	500	<17	<17
			M	M	M	M	M	M
Pyrene	<15 µg/kg	TM218	<15	<15	<15	368	<15	<15
			M	M	M	M	M	M
Benz(a)anthracene	<14 µg/kg	TM218	<14	<14	<14	97.7	<14	<14
			M	M	M	M	M	M
Chrysene	<10 µg/kg	TM218	<10	<10	<10	64.4	<10	<10
			M	M	M	M	M	M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15	<15	97.2	<15	<15
			M	M	M	M	M	M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	<14	40.8	<14	<14
			M	M	M	M	M	M
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15	<15	58.4	<15	<15
			M	M	M	M	M	M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	<18	34.5	<18	<18
			M	M	M	M	M	M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	<23	<23	<23
			M	M	M	M	M	M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24	<24	44	<24	<24
			M	M	M	M	M	M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	1640	<118	<118
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218	<10	<10	<10	<10	<10	<10



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## PAH by GCMS

#	Results Legend	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
M	ISO17025 accredited. mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
tot.unfilt	Total / unfiltered sample.	Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
**	Subcontracted test.	Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
(F)	Trigger breach confirmed	SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
1-5&*&@	Sample deviation (see appendix)	Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
		AGS Reference						
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	103	102	105	95.6	112	110
Acenaphthene-d10 % recovery**	%	TM218	99.6	100	105	104	105	103
Phenanthrene-d10 % recovery**	%	TM218	105	88.5	102	112	105	104
Chrysene-d12 % recovery**	%	TM218	104	79.9	94.4	111	91.5	92.1
Perylene-d12 % recovery**	%	TM218	115	79.4	101	117	81.1	87.1
Naphthalene	<9 µg/kg	TM218	59.2	<9	<9	120	<9	<9
			M	M	M	M	M	M
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	<12	<12	<12
			M	M	M	M	M	M
Acenaphthene	<8 µg/kg	TM218	31.7	<8	<8	82.9	<8	<8
			M	M	M	M	M	M
Fluorene	<10 µg/kg	TM218	33.8	<10	<10	62.4	<10	<10
			M	M	M	M	M	M
Phenanthrene	<15 µg/kg	TM218	97.2	<15	<15	209	<15	<15
			M	M	M	M	M	M
Anthracene	<16 µg/kg	TM218	73.3	<16	<16	104	<16	<16
			M	M	M	M	M	M
Fluoranthene	<17 µg/kg	TM218	418	<17	<17	610	<17	<17
			M	M	M	M	M	M
Pyrene	<15 µg/kg	TM218	321	<15	<15	481	<15	<15
			M	M	M	M	M	M
Benz(a)anthracene	<14 µg/kg	TM218	107	<14	<14	151	<14	<14
			M	M	M	M	M	M
Chrysene	<10 µg/kg	TM218	78.4	<10	<10	148	<10	<10
			M	M	M	M	M	M
Benzo(b)fluoranthene	<15 µg/kg	TM218	92.7	<15	<15	206	<15	<15
			M	M	M	M	M	M
Benzo(k)fluoranthene	<14 µg/kg	TM218	39.2	<14	<14	82.6	<14	<14
			M	M	M	M	M	M
Benzo(a)pyrene	<15 µg/kg	TM218	68	<15	<15	120	<15	<15
			M	M	M	M	M	M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	34.4	<18	<18	77.2	<18	<18
			M	M	M	M	M	M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	<23	<23	<23
			M	M	M	M	M	M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	47.5	<24	<24	108	<24	<24
			M	M	M	M	M	M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	1500	<118	<118	2560	<118	<118
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218	<10	<10	<10	<10	<10	<10



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## PAH by GCMS

Results Legend		Customer Sample Ref.	VC01B		VC01B		VC09B		VC09B	
#	ISO17025 accredited.		Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66			
M	mCERTS accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)				
aq	Aqueous / settled sample.	Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018				
diss.filt	Dissolved / filtered sample.	Sample Time	11:50:00	11:50:00	13:44:00	13:44:00				
tot.unfilt	Total / unfiltered sample.	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018				
**	Subcontracted test.	SDG Ref	180424-31	180424-31	180424-31	180424-31				
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	17431884	17431885	17431893	17431894				
(F)	Trigger breach confirmed	AGS Reference								
1-5&*\$@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Naphthalene-d8 % recovery**	%	TM218	107	105	101	105				
Acenaphthene-d10 % recovery**	%	TM218	100	98.2	100	101				
Phenanthrene-d10 % recovery**	%	TM218	102	99.5	99.7	99.4				
Chrysene-d12 % recovery**	%	TM218	96.3	92.5	89.9	91.3				
Perylene-d12 % recovery**	%	TM218	100	98.1	93.4	92.3				
Naphthalene	<9 µg/kg	TM218	<9	<9	<9	<9				
			M	M	M	M				
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	<12				
			M	M	M	M				
Acenaphthene	<8 µg/kg	TM218	<8	<8	<8	<8				
			M	M	M	M				
Fluorene	<10 µg/kg	TM218	<10	<10	<10	<10				
			M	M	M	M				
Phenanthrene	<15 µg/kg	TM218	<15	<15	<15	<15				
			M	M	M	M				
Anthracene	<16 µg/kg	TM218	<16	<16	<16	<16				
			M	M	M	M				
Fluoranthene	<17 µg/kg	TM218	<17	<17	<17	<17				
			M	M	M	M				
Pyrene	<15 µg/kg	TM218	<15	<15	<15	<15				
			M	M	M	M				
Benz(a)anthracene	<14 µg/kg	TM218	<14	<14	<14	<14				
			M	M	M	M				
Chrysene	<10 µg/kg	TM218	<10	<10	<10	<10				
			M	M	M	M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15	<15	<15				
			M	M	M	M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	<14	<14				
			M	M	M	M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15	<15	<15				
			M	M	M	M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	<18	<18				
			M	M	M	M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	<23				
			M	M	M	M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24	<24	<24				
			M	M	M	M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118				
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218	<10	<10	<10	<10				



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.		15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431917	17431916	17431915	17431914	17431903	17431906
(F)	Trigger breach confirmed							
1-5&#x26;	Sample deviation (see appendix)							
AGS Reference								
Component	LOD/Units	Method						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## Semi Volatile Organic Compounds

#	Results Legend	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
M	ISO17025 accredited. mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
tot.unfilt	Total / unfiltered sample.	Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
**	Subcontracted test.	Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
(F)	Trigger breach confirmed	SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
1-5&#246;	Sample deviation (see appendix)	Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
Component	LOD/Units	Method						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100







# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.		14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431895	17431896	17431898	17431899	17431900	17431883
(F)	Trigger breach confirmed							
1-5&#x26;	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.		17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431882	17431902	17431901	17431887	17431886	17431889
(F)	Trigger breach confirmed							
1-5&#9	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100



# CERTIFICATE OF ANALYSIS

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50	
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	
diss.filt	Dissolved / filtered sample.		17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00	
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	
*	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431882	17431902	17431901	17431887	17431886	17431889	
(F)	Trigger breach confirmed								
1-5&§@	Sample deviation (see appendix)								
<b>Component</b>	<b>LOD/Units</b>		<b>Method</b>						
2,6-Dinitrotoluene	<100 µg/kg		TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg		TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg		TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg		TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
tot.unfilt	Total / unfiltered sample.	Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
**	Subcontracted test.	Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
(F)	Trigger breach confirmed	SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
1-5&#x2013;@	Sample deviation (see appendix)	Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
Component	LOD/Units	Method						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30	
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	
diss.filt	Dissolved / filtered sample.		09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00	
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	
*	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431891	17431890	17431892	17431913	17431911	17431912	
(F)	Trigger breach confirmed								
1-5&6	Sample deviation (see appendix)								
Component	LOD/Units		Method						
2,6-Dinitrotoluene	<100 µg/kg		TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg		TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	19/04/2018	19/04/2018		
diss.filt	Dissolved / filtered sample.		11:50:00	11:50:00	13:44:00	13:44:00		
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018		
*	Subcontracted test.		180424-31	180424-31	180424-31	180424-31		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431884	17431885	17431893	17431894		
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
	AGS Reference							
Component	LOD/Units	Method						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100		
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100		
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100		
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100		
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100		
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100		
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100		
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100		
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100		
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100		
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100		
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		







# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## TPH CWG (S)

Results Legend		Customer Sample Ref.	VC02		VC02		VC03		VC03	
#	ISO17025 accredited.		0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20		
M	mCERTS accredited.	Depth (m)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.	Sample Type	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.	Date Sampled	15:43:00	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00	14:28:00
tot.unfilt	Total / unfiltered sample.	Sample Time	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.	Date Received	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	SDG Ref	17431917	17431916	17431915	17431914	17431903	17431906	17431906	17431906
(F)	Trigger breach confirmed	Lab Sample No.(s)								
1-5&S@	Sample deviation (see appendix)	AGS Reference								
Component	LOD/Units	Method								
GRO Surrogate % recovery**	%	TM089	140	126	78	75	65	128		
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44	<44	<44	<44	130	<44		
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	<5	<5	<5	<5		
Benzene	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10		
Toluene	<2 µg/kg	TM089	<2	<2	<2	<2	<2	<2		
Ethylbenzene	<3 µg/kg	TM089	<3	<3	<3	<3	<3	<3		
m,p-Xylene	<6 µg/kg	TM089	<6	<6	<6	<6	<6	<6		
o-Xylene	<3 µg/kg	TM089	<3	<3	<3	<3	<3	<3		
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	<9	<9		
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	<24	<24		
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10	<10	11.2	<10		
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10	<10	31.6	<10		
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10	<10	20.5	<10		
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	<10	<10	27.9	<10		
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	<100	<100	590	3300	<100		
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	<100	<100	1450	11000	<100		
Aliphatics >C21-C35	<100 µg/kg	TM173	<100	<100	3300	5280	41800	<100		
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	<100	<100	8940	<100		
Total Aliphatics >C12-C44	<100 µg/kg	TM173	<100	<100	3300	7320	65000	<100		
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10		
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10		
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10	<10	18.6	<10		
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	<10	<10	18.6	<10		
Aromatics >EC12-EC16	<100 µg/kg	TM173	<100	<100	<100	<100	1710	<100		
Aromatics >EC16-EC21	<100 µg/kg	TM173	<100	<100	663	1230	8690	<100		
Aromatics >EC21-EC35	<100 µg/kg	TM173	<100	<100	2940	4160	31400	<100		
Aromatics >EC35-EC44	<100 µg/kg	TM173	<100	<100	690	3330	13100	<100		
Aromatics >EC40-EC44	<100 µg/kg	TM173	<100	<100	226	1380	4540	<100		
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	<100	<100	4290	8720	54900	<100		
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	<100	<100	7590	16000	120000	<100		



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## TPH CWG (S)

#	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04	
<div style="font-size: small;"> <b>Results Legend</b>            # ISO17025 accredited.            M mCERTS accredited.            aq Aqueous / settled sample.            diss.filt Dissolved / filtered sample.            tot.unfilt Total / unfiltered sample.            * Subcontracted test.            ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery            (F) Trigger breach confirmed            1-5&amp;§@ Sample deviation (see appendix)         </div>								
<div style="font-size: x-small;"> <b>AGS Reference</b>            Depth (m)            Sample Type            Date Sampled            Sample Time            Date Received            SDG Ref            Lab Sample No.(s)         </div>								
<div style="font-size: x-small;"> <b>Method</b>            2.80 - 3.20            Soil/Solid (S)            20/04/2018            14:28:00            24/04/2018            180424-31            17431905         </div>								
<div style="font-size: x-small;"> <b>Method</b>            3.39 - 3.79            Soil/Solid (S)            20/04/2018            14:28:00            24/04/2018            180424-31            17431904         </div>								
<div style="font-size: x-small;"> <b>Method</b>            0.80 - 1.20            Soil/Solid (S)            19/04/2018            15:50:00            24/04/2018            180424-31            17431908         </div>								
<div style="font-size: x-small;"> <b>Method</b>            1.80 - 2.20            Soil/Solid (S)            19/04/2018            15:50:00            24/04/2018            180424-31            17431909         </div>								
<div style="font-size: x-small;"> <b>Method</b>            2.80 - 3.20            Soil/Solid (S)            19/04/2018            15:50:00            24/04/2018            180424-31            17431910         </div>								
<div style="font-size: x-small;"> <b>Method</b>            3.60 - 4.00            Soil/Solid (S)            19/04/2018            15:50:00            24/04/2018            180424-31            17431907         </div>								
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	73	111	159	22	122	118
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44	<44	<44	<44	<44	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	<5	<5	<5	<5
Benzene	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Toluene	<2 µg/kg	TM089	<2	<2	<2	<2	<2	<2
Ethylbenzene	<3 µg/kg	TM089	<3	<3	<3	<3	<3	<3
m,p-Xylene	<6 µg/kg	TM089	<6	<6	<6	<6	<6	<6
o-Xylene	<3 µg/kg	TM089	<3	<3	<3	<3	<3	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	<100	<100	<100	<100	<100
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	<100	1080	<100	<100	<100
Aliphatics >C21-C35	<100 µg/kg	TM173	2790	<100	2860	<100	<100	<100
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	<100	<100	<100	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173	2790	<100	3940	<100	<100	<100
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173	<100	<100	<100	<100	<100	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173	<100	<100	<100	<100	<100	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173	2230	<100	<100	<100	<100	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173	1320	<100	<100	<100	<100	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173	<100	<100	<100	<100	<100	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	3550	<100	<100	<100	<100	<100
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	6340	<100	3940	<100	<100	<100



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## TPH CWG (S)

Results Legend		Customer Sample Ref.	VC05		VC05		VC05		VC06		VC06		VC07	
#	M		Depth (m)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted test. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed		Date Sampled 19/04/2018 Sample Time 14:45:00 Date Received 24/04/2018 SDG Ref 180424-31 Lab Sample No.(s) 17431895	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20	2.00 - 2.46	
Component		LOD/Units	Method		AGS Reference		AGS Reference		AGS Reference		AGS Reference			
GRO Surrogate % recovery**		%	TM089	63	104	112	55	115	17					
GRO TOT (Moisture Corrected)		<44 µg/kg	TM089	<44	<44	<44	246	<44	<44					
Methyl tertiary butyl ether (MTBE)		<5 µg/kg	TM089	<5	<5	<5	<5	<5	<5					
Benzene		<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10					
Toluene		<2 µg/kg	TM089	<2	<2	<2	<2	<2	<2					
Ethylbenzene		<3 µg/kg	TM089	<3	<3	<3	<3	<3	<3					
m,p-Xylene		<6 µg/kg	TM089	<6	<6	<6	<6	<6	<6					
o-Xylene		<3 µg/kg	TM089	<3	<3	<3	<3	<3	<3					
sum of detected mpo xylene by GC		<9 µg/kg	TM089	<9	<9	<9	<9	<9	<9					
sum of detected BTEX by GC		<24 µg/kg	TM089	<24	<24	<24	<24	<24	<24					
Aliphatics >C5-C6		<10 µg/kg	TM089	<10	<10	<10	16.1	<10	<10					
Aliphatics >C6-C8		<10 µg/kg	TM089	21.5	<10	<10	59.6	<10	<10					
Aliphatics >C8-C10		<10 µg/kg	TM089	10.7	<10	<10	43.5	<10	<10					
Aliphatics >C10-C12		<10 µg/kg	TM089	<10	<10	<10	54.7	<10	<10					
Aliphatics >C12-C16		<100 µg/kg	TM173	4120	<100	<100	1190	<100	<100					
Aliphatics >C16-C21		<100 µg/kg	TM173	12800	<100	<100	4470	<100	<100					
Aliphatics >C21-C35		<100 µg/kg	TM173	47100	<100	<100	22000	<100	<100					
Aliphatics >C35-C44		<100 µg/kg	TM173	8200	<100	<100	3420	<100	<100					
Total Aliphatics >C12-C44		<100 µg/kg	TM173	72200	<100	<100	31100	<100	<100					
Aromatics >EC5-EC7		<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10					
Aromatics >EC7-EC8		<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10					
Aromatics >EC8-EC10		<10 µg/kg	TM089	10.7	<10	<10	35.4	<10	<10					
Aromatics >EC10-EC12		<10 µg/kg	TM089	<10	<10	<10	37	<10	<10					
Aromatics >EC12-EC16		<100 µg/kg	TM173	2910	<100	<100	1690	<100	<100					
Aromatics >EC16-EC21		<100 µg/kg	TM173	10100	1860	<100	5640	<100	<100					
Aromatics >EC21-EC35		<100 µg/kg	TM173	35500	16000	<100	24700	<100	<100					
Aromatics >EC35-EC44		<100 µg/kg	TM173	13300	7980	<100	11400	1120	<100					
Aromatics >EC40-EC44		<100 µg/kg	TM173	4460	2660	<100	3700	<100	<100					
Total Aromatics >EC12-EC44		<100 µg/kg	TM173	61700	25800	<100	43400	1120	<100					
Total Aliphatics & Aromatics >C5-C44		<100 µg/kg	TM173	134000	25800	<100	74700	1120	<100					



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

**TPH CWG (S)**

#	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
<div style="font-size: small;"> <b>Results Legend</b>            # ISO17025 accredited.            M mCERTS accredited.            aq Aqueous / settled sample.            diss.filt Dissolved / filtered sample.            tot.unfilt Total / unfiltered sample.            * Subcontracted test.            ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery            (F) Trigger breach confirmed            1-5&amp;§@ Sample deviation (see appendix)         </div>							
<div style="font-size: x-small;"> <b>Depth (m)</b>  <b>Sample Type</b>  <b>Date Sampled</b>  <b>Sample Time</b>  <b>Date Received</b>  <b>SDG Ref</b>  <b>Lab Sample No.(s)</b>  <b>AGS Reference</b> </div>							
<div style="font-size: x-small;"> <b>Component</b>      <b>LOD/Units</b>      <b>Method</b> </div>							
GRO Surrogate % recovery**	%	TM089	115	115	116	66	113
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44	<44	<44	211	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	<5	<5	<5
Benzene	<10 µg/kg	TM089	<10	<10	<10	<10	<10
Toluene	<2 µg/kg	TM089	<2	<2	<2	<2	<2
Ethylbenzene	<3 µg/kg	TM089	<3	<3	<3	<3	<3
m,p-Xylene	<6 µg/kg	TM089	<6	<6	<6	<6	<6
o-Xylene	<3 µg/kg	TM089	<3	<3	<3	<3	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10	10.7	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10	30.4	<10
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10	26.9	<10
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	<10	71.6	<10
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	139	<100	5600	<100
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	<100	<100	14600	<100
Aliphatics >C21-C35	<100 µg/kg	TM173	<100	<100	<100	38000	<100
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	<100	3710	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173	<100	139	<100	61800	<100
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10	21.5	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	<10	48.3	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173	<100	<100	<100	3740	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173	<100	<100	<100	19000	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173	<100	149	<100	43800	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173	<100	4380	<100	13200	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173	<100	2850	<100	4880	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	<100	4530	<100	79800	<100
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	<100	4670	<100	142000	<100



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## TPH CWG (S)

#	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
<div style="font-size: small;"> <b>Results Legend</b>            # ISO17025 accredited.            M mCERTS accredited.            aq Aqueous / settled sample.            diss.filt Dissolved / filtered sample.            tot.unfilt Total / unfiltered sample.            * Subcontracted test.            ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery.            (F) Trigger breach confirmed            1-5&amp;#s@ Sample deviation (see appendix)         </div>							
<div style="font-size: x-small;"> <b>Depth (m)</b>  <b>Sample Type</b>  <b>Date Sampled</b>  <b>Sample Time</b>  <b>Date Received</b>  <b>SDG Ref</b>  <b>Lab Sample No.(s)</b>  <b>AGS Reference</b> </div>							
<div style="font-size: x-small;"> <b>Component</b>      <b>LOD/Units</b>      <b>Method</b> </div>							
GRO Surrogate % recovery**	%	TM089	67	75	114	68	85
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	298	<44	82.1	824	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	<5	<5	<5
Benzene	<10 µg/kg	TM089	<10	<10	<10	<10	<10
Toluene	<2 µg/kg	TM089	<2	<2	<2	<2	<2
Ethylbenzene	<3 µg/kg	TM089	<3	<3	<3	<3	<3
m,p-Xylene	<6 µg/kg	TM089	<6	<6	<6	<6	<6
o-Xylene	<3 µg/kg	TM089	<3	<3	<3	<3	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	15.4	<10	<10	18.9	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	49.6	<10	<10	75.7	<10
Aliphatics >C8-C10	<10 µg/kg	TM089	42.8	10.4	27.4	151	<10
Aliphatics >C10-C12	<10 µg/kg	TM089	94.1	<10	14.3	282	<10
Aliphatics >C12-C16	<100 µg/kg	TM173	1140	<100	<100	4690	<100
Aliphatics >C16-C21	<100 µg/kg	TM173	4200	<100	<100	10100	<100
Aliphatics >C21-C35	<100 µg/kg	TM173	14800	<100	<100	22600	<100
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	<100	<100	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173	20100	<100	<100	37400	<100
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	34.2	<10	19	108	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089	63.3	<10	<10	187	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173	1160	<100	<100	3860	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173	7400	<100	<100	14400	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173	17400	<100	<100	23600	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173	5280	<100	<100	3100	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173	2070	<100	<100	<100	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	31300	<100	<100	45000	<100
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	51700	<100	<100	83200	<100



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## TPH CWG (S)

#	Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
<div style="font-size: small;"> <b>Results Legend</b>            # ISO17025 accredited.            M mCERTS accredited.            aq Aqueous / settled sample.            diss.filt Dissolved / filtered sample.            tot.unfilt Total / unfiltered sample.            * Subcontracted test.            ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery            (F) Trigger breach confirmed            1-5&amp;#8@ Sample deviation (see appendix)         </div>							
<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Sample Time</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b>		0.80 - 1.20 Soil/Solid (S) 20/04/2018 11:50:00 24/04/2018 180424-31 17431884	1.24 - 1.54 Soil/Solid (S) 20/04/2018 11:50:00 24/04/2018 180424-31 17431885	0.80 - 1.20 Soil/Solid (S) 19/04/2018 13:44:00 24/04/2018 180424-31 17431893	1.26 - 1.66 Soil/Solid (S) 19/04/2018 13:44:00 24/04/2018 180424-31 17431894		
<b>Component</b>	<b>LOD/Units</b>	<b>Method</b>					
GRO Surrogate % recovery**	%	TM089	109	118	113	111	
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44	<44	<44	<44	
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	<5	<5	
Benzene	<10 µg/kg	TM089	<10	<10	<10	<10	
Toluene	<2 µg/kg	TM089	<2	<2	<2	<2	
Ethylbenzene	<3 µg/kg	TM089	<3	<3	<3	<3	
m,p-Xylene	<6 µg/kg	TM089	<6	<6	<6	<6	
o-Xylene	<3 µg/kg	TM089	<3	<3	<3	<3	
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10	<10	
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10	<10	
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10	<10	
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	<10	<10	
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	<100	<100	271	
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	<100	352	847	
Aliphatics >C21-C35	<100 µg/kg	TM173	<100	<100	2510	1850	
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	2740	<100	
Total Aliphatics >C12-C44	<100 µg/kg	TM173	<100	<100	5600	2970	
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10	<10	
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	<10	<10	
Aromatics >EC12-EC16	<100 µg/kg	TM173	<100	<100	<100	282	
Aromatics >EC16-EC21	<100 µg/kg	TM173	<100	<100	<100	377	
Aromatics >EC21-EC35	<100 µg/kg	TM173	<100	<100	622	466	
Aromatics >EC35-EC44	<100 µg/kg	TM173	1380	<100	<100	<100	
Aromatics >EC40-EC44	<100 µg/kg	TM173	1100	<100	<100	<100	
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	1380	<100	622	1120	
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	1380	<100	6220	4100	



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## VOC MS (S)

Results Legend		Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.		15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431917	17431916	17431915	17431914	17431903	17431906
(F)	Trigger breach confirmed							
1-5&#203@	Sample deviation (see appendix)							
	AGS Reference							
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM116	107	108	103	105	109	130
Toluene-d8**	%	TM116	101	101	97.5	96.7	98.7	99
4-Bromofluorobenzene**	%	TM116	97	96.2	83.4	83.8	91.7	101
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<60 #	<6 M
Chloromethane	<7 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #	<70 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<60 #	<6 M
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Trichlorofluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<60 #	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<100 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<7 M	24.3 M	<7 M	<70 #	<7 M
Dichloromethane	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<100 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<80 #	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<60 #	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
Bromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Chloroform	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<80 #	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<70 #	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<50 #	<5 M
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<90 #	<9 M
Trichloroethene	<9 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<90 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Dibromomethane	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<90 #	<9 M
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<70 #	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<70 #	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
1,3-Dichloropropane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<70 #	<7 M



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## VOC MS (S)

Results Legend		Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.		15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
*	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431917	17431916	17431915	17431914	17431903	17431906
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Tetrachloroethene	<5 µg/kg	TM116	<5	<5	<5	<5	<50	<5
			M	M	M	M	#	M
Dibromochloromethane	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			M	M	M	M	#	M
1,2-Dibromoethane	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			M	M	M	M	#	M
Chlorobenzene	<5 µg/kg	TM116	<5	<5	<5	<5	<50	<5
			M	M	M	M	#	M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			M	M	M	M	#	M
Ethylbenzene	<4 µg/kg	TM116	<4	<4	<4	<4	<40	<4
			M	M	M	M	#	M
p/m-Xylene	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			#	#	#	#	#	#
o-Xylene	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			M	M	M	M	#	M
Styrene	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			#	#	#	#	#	#
Bromoform	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			M	M	M	M	#	M
Isopropylbenzene	<5 µg/kg	TM116	<5	<5	<5	<5	<50	<5
			#	#	#	#	#	#
1,1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			#	#	#	#	#	#
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16	<16	<16	<16	<160	<16
			M	M	M	M	#	M
Bromobenzene	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			M	M	M	M	#	M
Propylbenzene	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			M	M	M	M	#	M
2-Chlorotoluene	<9 µg/kg	TM116	<9	<9	<9	<9	<90	<9
			M	M	M	M	#	M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8	<8	<8	<8	<80	<8
			M	M	M	M	#	M
4-Chlorotoluene	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			M	M	M	M	#	M
tert-Butylbenzene	<14 µg/kg	TM116	<14	<14	<14	<14	<140	<14
			M	M	M	M	#	M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9	<9	<9	<9	<90	<9
			#	#	#	#	#	#
sec-Butylbenzene	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
4-Isopropyltoluene	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			M	M	M	M	#	M
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8	<8	<8	<8	<80	<8
			M	M	M	M	#	M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5	<5	<5	<5	<50	<5
			M	M	M	M	#	M
n-Butylbenzene	<11 µg/kg	TM116	<11	<11	<11	<11	<110	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			M	M	M	M	#	M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14	<14	<14	<14	<140	<14
			M	M	M	M	#	M
Tert-amyl methyl ether	<10 µg/kg	TM116	<10	<10	<10	<10	<100	<10
			#	#	#	#	#	#
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20	<20	<20	<20	<200	<20
Hexachlorobutadiene	<20 µg/kg	TM116	<20	<20	<20	<20	<200	<20
Naphthalene	<13 µg/kg	TM116	<13	<13	<13	<13	<130	<13
			M	M	M	M	#	M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<20	<20	<20	<20	<200	<20
			#	#	#	#	#	#





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## VOC MS (S)

Results Legend		Customer Sample Ref.	VC03		VC04		VC04		VC04	
#	ISO17025 accredited.		2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00		
M	mCERTS accredited.	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018			
diss.filt	Dissolved / filtered sample.	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00			
tot.unfilt	Total / unfiltered sample.	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018			
**	Subcontracted test.	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31			
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref			
(F)	Trigger breach confirmed	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)			
1-5&#8203;	@ Sample deviation (see appendix)	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference			
Component	LOD/Units	Method								
Dibromofluoromethane**	%	TM116	125	106	105	102	103	101		
Toluene-d8**	%	TM116	99.4	98.5	100	100	99.1	99.4		
4-Bromofluorobenzene**	%	TM116	92.8	96.1	94.9	97.6	96.9	98.7		
Dichlorodifluoromethane	<6 µg/kg	TM116	<6	<6	<6	<6	<6	<6		
Chloromethane	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7		
Vinyl Chloride	<6 µg/kg	TM116	<6	<6	<6	<6	<6	<6		
Bromomethane	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
Chloroethane	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
Trichlorofluoromethane	<6 µg/kg	TM116	<6	<6	<6	<6	<6	<6		
1,1-Dichloroethene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
Carbon Disulphide	<7 µg/kg	TM116	17.5	<7	<7	<7	<7	<7		
Dichloromethane	<10 µg/kg	TM116	14.3	<10	<10	<10	<10	<10		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
1,1-Dichloroethane	<8 µg/kg	TM116	<8	<8	<8	<8	<8	<8		
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6	<6	<6	<6	<6	<6		
2,2-Dichloropropane	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
Bromochloromethane	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
Chloroform	<8 µg/kg	TM116	<8	<8	<8	<8	<8	<8		
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7		
1,1-Dichloropropene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
Carbontetrachloride	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
1,2-Dichloroethane	<5 µg/kg	TM116	<5	<5	<5	<5	<5	<5		
Benzene	<9 µg/kg	TM116	<9	<9	<9	<9	<9	<9		
Trichloroethene	<9 µg/kg	TM116	<9	<9	<9	<9	<9	<9		
1,2-Dichloropropane	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
Dibromomethane	<9 µg/kg	TM116	<9	<9	<9	<9	<9	<9		
Bromodichloromethane	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7		
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
Toluene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7		
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10		
1,3-Dichloropropane	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7		



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## VOC MS (S)

Results Legend		Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
diss.filt	Dissolved / filtered sample.		14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
tot.unfilt	Total / unfiltered sample.		24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
*	Subcontracted test.		180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17431905	17431904	17431908	17431909	17431910	17431907
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Tetrachloroethene	<5 µg/kg	TM116	<5	<5	<5	<5	<5	<5
Dibromochloromethane	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,2-Dibromoethane	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
Chlorobenzene	<5 µg/kg	TM116	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
Ethylbenzene	<4 µg/kg	TM116	<4	<4	<4	<4	<4	<4
p/m-Xylene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
o-Xylene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
Styrene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
Bromoform	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
Isopropylbenzene	<5 µg/kg	TM116	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16	<16	<16	<16	<16	<16
Bromobenzene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
Propylbenzene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
2-Chlorotoluene	<9 µg/kg	TM116	<9	<9	<9	<9	<9	<9
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8	<8	<8	<8	<8	<8
4-Chlorotoluene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
tert-Butylbenzene	<14 µg/kg	TM116	<14	<14	<14	<14	<14	<14
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9	<9	<9	<9	<9	<9
sec-Butylbenzene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8	<8	<8	<8	<8	<8
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5	<5	<5	<5	<5	<5
n-Butylbenzene	<11 µg/kg	TM116	<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14	<14	<14	<14	<14	<14
Tert-amyl methyl ether	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Naphthalene	<13 µg/kg	TM116	<13	<13	<13	<13	<13	<13
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<20	<20	<20	<20	<20	<20



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## VOC MS (S)

Results Legend		Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
#	ISO17025 accredited.		0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
M	mCERTS accredited.	Depth (m)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.	Sample Type	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.	Date Sampled	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
tot.unfilt	Total / unfiltered sample.	Sample Time	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
**	Subcontracted test.	Date Received	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	SDG Ref	17431895	17431896	17431898	17431899	17431900	17431883
(F)	Trigger breach confirmed	Lab Sample No.(s)						
1-5&#8203;	Sample deviation (see appendix)	AGS Reference						
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM116	103	113	150	141	104	111
Toluene-d8**	%	TM116	99.2	98.3	101	98.1	99.1	99.7
4-Bromofluorobenzene**	%	TM116	94.4	96.3	104	94.3	96.6	100
Dichlorodifluoromethane	<6 µg/kg	TM116	<60	<6	<6	<60	<6	<6
Chloromethane	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7
Vinyl Chloride	<6 µg/kg	TM116	<60	<6	<6	<60	<6	<6
Bromomethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
Chloroethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
Trichlorofluoromethane	<6 µg/kg	TM116	<60	<6	<6	<60	<6	<6
1,1-Dichloroethene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
Carbon Disulphide	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7
Dichloromethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
1,1-Dichloroethane	<8 µg/kg	TM116	<80	<8	<8	<80	<8	<8
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<60	<6	<6	<60	<6	<6
2,2-Dichloropropane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
Bromochloromethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
Chloroform	<8 µg/kg	TM116	<80	<8	<8	<80	<8	<8
1,1,1-Trichloroethane	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7
1,1-Dichloropropene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
Carbontetrachloride	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
1,2-Dichloroethane	<5 µg/kg	TM116	<50	<5	<5	<50	<5	<5
Benzene	<9 µg/kg	TM116	<90	<9	<9	<90	<9	<9
Trichloroethene	<9 µg/kg	TM116	<90	<9	<9	<90	<9	<9
1,2-Dichloropropane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
Dibromomethane	<9 µg/kg	TM116	<90	<9	<9	<90	<9	<9
Bromodichloromethane	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
Toluene	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10
1,3-Dichloropropane	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## VOC MS (S)

Results Legend			Customer Sample Ref.		VC05	VC05	VC05	VC06	VC06	VC07	
# ISO17025 accredited.			<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Sample Time</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b> <b>AGS Reference</b>		0.80 - 1.20 Soil/Solid (S) 19/04/2018 14:45:00	1.80 - 2.20 Soil/Solid (S) 19/04/2018 14:45:00	2.53 - 2.93 Soil/Solid (S) 19/04/2018 14:45:00	0.80 - 1.20 Soil/Solid (S) 20/04/2018 08:29:00	2.00 - 2.46 Soil/Solid (S) 20/04/2018 08:29:00	0.80 - 1.20 Soil/Solid (S) 20/04/2018 17:40:00	
M mCERTS accredited.					24/04/2018 180424-31 17431895	24/04/2018 180424-31 17431896	24/04/2018 180424-31 17431898	24/04/2018 180424-31 17431899	24/04/2018 180424-31 17431900	24/04/2018 180424-31 17431883	
aq Aqueous / settled sample.											
diss.filt Dissolved / filtered sample.											
tot.unfilt Total / unfiltered sample.											
* Subcontracted test.											
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery											
(F) Trigger breach confirmed											
1-5&#8@ Sample deviation (see appendix)											
Component	LOD/Units	Method									
Tetrachloroethene	<5 µg/kg	TM116		<50	M	<5	M	<5	M	<5	M
Dibromochloromethane	<10 µg/kg	TM116		<100	M	<10	M	<100	M	<10	M
1,2-Dibromoethane	<10 µg/kg	TM116		<100	M	<10	M	<100	M	<10	M
Chlorobenzene	<5 µg/kg	TM116		<50	M	<5	M	<50	M	<5	M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<100	M	<10	M	<100	M	<10	M
Ethylbenzene	<4 µg/kg	TM116		<40	M	<4	M	<40	M	<4	M
p/m-Xylene	<10 µg/kg	TM116		<100	#	<10	#	<100	#	<10	#
o-Xylene	<10 µg/kg	TM116		<100	M	<10	M	<100	M	<10	M
Styrene	<10 µg/kg	TM116		<100	#	<10	#	<100	#	<10	#
Bromoform	<10 µg/kg	TM116		<100	M	<10	M	<100	M	<10	M
Isopropylbenzene	<5 µg/kg	TM116		<50	#	<5	#	<50	#	<5	#
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<100	#	<10	#	<100	#	<10	#
1,2,3-Trichloropropane	<16 µg/kg	TM116		<160	M	<16	M	<160	M	<16	M
Bromobenzene	<10 µg/kg	TM116		<100	M	<10	M	<100	M	<10	M
Propylbenzene	<10 µg/kg	TM116		<100	M	<10	M	<100	M	<10	M
2-Chlorotoluene	<9 µg/kg	TM116		<90	M	<9	M	<90	M	<9	M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<80	M	<8	M	<80	M	<8	M
4-Chlorotoluene	<10 µg/kg	TM116		<100	M	<10	M	<100	M	<10	M
tert-Butylbenzene	<14 µg/kg	TM116		<140	M	<14	M	<140	M	<14	M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<90	#	<9	#	<90	#	<9	#
sec-Butylbenzene	<10 µg/kg	TM116		<100		<10		<100		<10	
4-Isopropyltoluene	<10 µg/kg	TM116		<100	M	<10	M	<100	M	<10	M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<80	M	<8	M	<80	M	<8	M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<50	M	<5	M	<50	M	<5	M
n-Butylbenzene	<11 µg/kg	TM116		<110		<11		<110		<11	
1,2-Dichlorobenzene	<10 µg/kg	TM116		<100	M	<10	M	<100	M	<10	M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<140	M	<14	M	<140	M	<14	M
Tert-amyl methyl ether	<10 µg/kg	TM116		<100	#	<10	#	<100	#	<10	#
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<200		<20		<200		<20	
Hexachlorobutadiene	<20 µg/kg	TM116		<200		<20		<200		<20	
Naphthalene	<13 µg/kg	TM116		<130	M	<13	M	<130	M	<13	M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<200	#	<20	#	<200	#	<20	#



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## VOC MS (S)

Results Legend		Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11	
#	ISO17025 accredited.		1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50	
M	mCERTS accredited.	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
aq	Aqueous / settled sample.	Depth (m)	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00		
diss.filt	Dissolved / filtered sample.	Sample Type	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
tot.unfilt	Total / unfiltered sample.	Date Sampled	180424-31	180424-31	180424-31	180424-31	180424-31		
**	Subcontracted test.	Sample Time	17431882	17431902	17431901	17431887	17431889		
1-5&#8203;	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received							
(F)	Trigger breach confirmed	SDG Ref							
1-5&#8203;	AGS Reference	Lab Sample No.(s)							
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116	102	104	103	111	110	105	
Toluene-d8**	%	TM116	99.3	99.2	98.6	98.2	99	99.1	
4-Bromofluorobenzene**	%	TM116	98.3	98.3	95.9	94.2	95.7	95.7	
Dichlorodifluoromethane	<6 µg/kg	TM116	<6	<6	<6	<120	<6	<6	
Chloromethane	<7 µg/kg	TM116	<7	<7	<7	<140	<7	<7	
Vinyl Chloride	<6 µg/kg	TM116	<6	<6	<6	<120	<6	<6	
Bromomethane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
Chloroethane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
Trichlorofluoromethane	<6 µg/kg	TM116	<6	<6	<6	<120	<6	<6	
1,1-Dichloroethene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
Carbon Disulphide	<7 µg/kg	TM116	<7	<7	<7	<140	<7	<7	
Dichloromethane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
1,1-Dichloroethane	<8 µg/kg	TM116	<8	<8	<8	<160	<8	<8	
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6	<6	<6	<120	<6	<6	
2,2-Dichloropropane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
Bromochloromethane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
Chloroform	<8 µg/kg	TM116	<8	<8	<8	<160	<8	<8	
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7	<7	<7	<140	<7	<7	
1,1-Dichloropropene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
Carbontetrachloride	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
1,2-Dichloroethane	<5 µg/kg	TM116	<5	<5	<5	<100	<5	<5	
Benzene	<9 µg/kg	TM116	<9	<9	<9	<180	<9	<9	
Trichloroethene	<9 µg/kg	TM116	<9	<9	<9	<180	<9	<9	
1,2-Dichloropropane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
Dibromomethane	<9 µg/kg	TM116	<9	<9	<9	<180	<9	<9	
Bromodichloromethane	<7 µg/kg	TM116	<7	<7	<7	<140	<7	<7	
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
Toluene	<7 µg/kg	TM116	<7	<7	<7	<140	<7	<7	
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	
1,3-Dichloropropane	<7 µg/kg	TM116	<7	<7	<7	<140	<7	<7	



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## VOC MS (S)

Results Legend			Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
diss.filt	Dissolved / filtered sample.			17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
tot.unfilt	Total / unfiltered sample.			24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
*	Subcontracted test.			180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			17431882	17431902	17431901	17431887	17431886	17431889
(F)	Trigger breach confirmed								
1-5&*S@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Tetrachloroethene	<5 µg/kg	TM116	<5	<5	<5	<100	<5	<5	
			M	M	M	M	M	M	M
Dibromochloromethane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			M	M	M	M	M	M	M
1,2-Dibromoethane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			M	M	M	M	M	M	M
Chlorobenzene	<5 µg/kg	TM116	<5	<5	<5	<100	<5	<5	<5
			M	M	M	M	M	M	M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			M	M	M	M	M	M	M
Ethylbenzene	<4 µg/kg	TM116	<4	<4	<4	<80	<4	<4	<4
			M	M	M	M	M	M	M
p/m-Xylene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			#	#	#	#	#	#	#
o-Xylene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			M	M	M	M	M	M	M
Styrene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			#	#	#	#	#	#	#
Bromoform	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			M	M	M	M	M	M	M
Isopropylbenzene	<5 µg/kg	TM116	<5	<5	<5	<100	<5	<5	<5
			#	#	#	#	#	#	#
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			#	#	#	#	#	#	#
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16	<16	<16	<320	<16	<16	<16
			M	M	M	M	M	M	M
Bromobenzene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			M	M	M	M	M	M	M
Propylbenzene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			M	M	M	M	M	M	M
2-Chlorotoluene	<9 µg/kg	TM116	<9	<9	<9	<180	<9	<9	<9
			M	M	M	M	M	M	M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8	<8	<8	<160	<8	<8	<8
			M	M	M	M	M	M	M
4-Chlorotoluene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			M	M	M	M	M	M	M
tert-Butylbenzene	<14 µg/kg	TM116	<14	<14	<14	<280	<14	<14	<14
			M	M	M	M	M	M	M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9	<9	<9	<180	<9	<9	<9
			#	#	#	#	#	#	#
sec-Butylbenzene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			M	M	M	M	M	M	M
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8	<8	<8	<160	<8	<8	<8
			M	M	M	M	M	M	M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5	<5	<5	<100	<5	<5	<5
			M	M	M	M	M	M	M
n-Butylbenzene	<11 µg/kg	TM116	<11	<11	<11	<220	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			M	M	M	M	M	M	M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14	<14	<14	<280	<14	<14	<14
			M	M	M	M	M	M	M
Tert-amyl methyl ether	<10 µg/kg	TM116	<10	<10	<10	<200	<10	<10	<10
			#	#	#	#	#	#	#
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20	<20	<20	<400	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116	<20	<20	<20	<400	<20	<20	<20
Naphthalene	<13 µg/kg	TM116	<13	<13	<13	<260	<13	<13	<13
			M	M	M	M	M	M	M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<20	<20	<20	<400	<20	<20	<20
			#	#	#	#	#	#	#



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## VOC MS (S)

Results Legend		Customer Sample Ref.	VC10A		VC10A		VC10A		VC12A		VC12A		VC12A	
#	ISO17025 accredited.		Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30					
M	mCERTS accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)						
aq	Aqueous / settled sample.	Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018						
diss.filt	Dissolved / filtered sample.	Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00						
tot.unfilt	Total / unfiltered sample.	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018						
**	Subcontracted test.	SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31						
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912						
(F)	Trigger breach confirmed	AGS Reference												
1-5&#246;	Sample deviation (see appendix)													
Component	LOD/Units	Method												
Dibromofluoromethane**	%	TM116	122	104	101	118	107	111						
Toluene-d8**	%	TM116	97.4	99	98.8	97.4	100	101						
4-Bromofluorobenzene**	%	TM116	92.1	96.3	96.5	91.5	99.1	105						
Dichlorodifluoromethane	<6 µg/kg	TM116	<60	<6	<6	<60	<6	<6						
Chloromethane	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7						
Vinyl Chloride	<6 µg/kg	TM116	<60	<6	<6	<60	<6	<6						
Bromomethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
Chloroethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
Trichlorofluoromethane	<6 µg/kg	TM116	<60	<6	<6	<60	<6	<6						
1,1-Dichloroethene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
Carbon Disulphide	<7 µg/kg	TM116	<70	<7	<7	147	<7	<7						
Dichloromethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
1,1-Dichloroethane	<8 µg/kg	TM116	<80	<8	<8	<80	<8	<8						
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<60	<6	<6	<60	<6	<6						
2,2-Dichloropropane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
Bromochloromethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
Chloroform	<8 µg/kg	TM116	<80	<8	<8	<80	<8	<8						
1,1,1-Trichloroethane	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7						
1,1-Dichloropropene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
Carbontetrachloride	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
1,2-Dichloroethane	<5 µg/kg	TM116	<50	<5	<5	<50	<5	<5						
Benzene	<9 µg/kg	TM116	<90	<9	<9	<90	<9	<9						
Trichloroethene	<9 µg/kg	TM116	<90	<9	<9	<90	<9	<9						
1,2-Dichloropropane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
Dibromomethane	<9 µg/kg	TM116	<90	<9	<9	<90	<9	<9						
Bromodichloromethane	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7						
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
Toluene	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7						
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
1,1,2-Trichloroethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10						
1,3-Dichloropropane	<7 µg/kg	TM116	<70	<7	<7	<70	<7	<7						



# CERTIFICATE OF ANALYSIS

Validated
-----------

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## VOC MS (S)

Results Legend			Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
#	M	aq							
ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted test. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 1.20 Soil/Solid (S) 20/04/2018 09:24:00 24/04/2018 180424-31 17431891	1.80 - 2.20 Soil/Solid (S) 20/04/2018 09:24:00 24/04/2018 180424-31 17431890	2.45 - 2.85 Soil/Solid (S) 20/04/2018 09:24:00 24/04/2018 180424-31 17431892	0.80 - 1.20 Soil/Solid (S) 20/04/2018 13:27:00 24/04/2018 180424-31 17431913	1.80 - 2.20 Soil/Solid (S) 20/04/2018 13:27:00 24/04/2018 180424-31 17431911	2.80 - 3.30 Soil/Solid (S) 20/04/2018 13:27:00 24/04/2018 180424-31 17431912
Component	LOD/Units	Method							
Tetrachloroethene	<5 µg/kg	TM116	<50	<5	<5	<50	<5	<5	<5
			M	M	M	M	M	M	M
Dibromochloromethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			M	M	M	M	M	M	M
1,2-Dibromoethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			M	M	M	M	M	M	M
Chlorobenzene	<5 µg/kg	TM116	<50	<5	<5	<50	<5	<5	<5
			M	M	M	M	M	M	M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			M	M	M	M	M	M	M
Ethylbenzene	<4 µg/kg	TM116	<40	<4	<4	<40	<4	<4	<4
			M	M	M	M	M	M	M
p/m-Xylene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			#	#	#	#	#	#	#
o-Xylene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			M	M	M	M	M	M	M
Styrene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			#	#	#	#	#	#	#
Bromoform	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			M	M	M	M	M	M	M
Isopropylbenzene	<5 µg/kg	TM116	<50	<5	<5	<50	<5	<5	<5
			#	#	#	#	#	#	#
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			#	#	#	#	#	#	#
1,2,3-Trichloropropane	<16 µg/kg	TM116	<160	<16	<16	<160	<16	<16	<16
			M	M	M	M	M	M	M
Bromobenzene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			M	M	M	M	M	M	M
Propylbenzene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			M	M	M	M	M	M	M
2-Chlorotoluene	<9 µg/kg	TM116	<90	<9	<9	<90	<9	<9	<9
			M	M	M	M	M	M	M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<80	<8	<8	<80	<8	<8	<8
			M	M	M	M	M	M	M
4-Chlorotoluene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			M	M	M	M	M	M	M
tert-Butylbenzene	<14 µg/kg	TM116	<140	<14	<14	<140	<14	<14	<14
			M	M	M	M	M	M	M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<90	<9	<9	<90	<9	<9	<9
			#	#	#	#	#	#	#
sec-Butylbenzene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			M	M	M	M	M	M	M
1,3-Dichlorobenzene	<8 µg/kg	TM116	<80	<8	<8	<80	<8	<8	<8
			M	M	M	M	M	M	M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<50	<5	<5	<50	<5	<5	<5
			M	M	M	M	M	M	M
n-Butylbenzene	<11 µg/kg	TM116	<110	<11	<11	<110	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			M	M	M	M	M	M	M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<140	<14	<14	<140	<14	<14	<14
			M	M	M	M	M	M	M
Tert-amyl methyl ether	<10 µg/kg	TM116	<100	<10	<10	<100	<10	<10	<10
			#	#	#	#	#	#	#
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<200	<20	<20	<200	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116	<200	<20	<20	<200	<20	<20	<20
Naphthalene	<13 µg/kg	TM116	<130	<13	<13	<130	<13	<13	<13
			M	M	M	M	M	M	M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<200	<20	<20	<200	<20	<20	<20
			#	#	#	#	#	#	#





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## VOC MS (S)

Results Legend		Customer Sample Ref.	VC01B		VC09B	
#	ISO17025 accredited.		0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66
M	mCERTS accredited.	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
aq	Aqueous / settled sample.	Depth (m)	11:50:00	11:50:00	13:44:00	
diss.filt	Dissolved / filtered sample.	Sample Type	20/04/2018	20/04/2018	19/04/2018	
tot.unfilt	Total / unfiltered sample.	Date Sampled	24/04/2018	24/04/2018	24/04/2018	
**	Subcontracted test.	Sample Time	180424-31	180424-31	180424-31	
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received	17431884	17431885	17431893	
(F)	Trigger breach confirmed	SDG Ref				
1-5&#8203;	@ Sample deviation (see appendix)	Lab Sample No.(s)				
	AGS Reference					
Component	LOD/Units	Method				
Dibromofluoromethane**	%	TM116	160	111	116	103
Toluene-d8**	%	TM116	103	99	99.1	99
4-Bromofluorobenzene**	%	TM116	107	95.2	97.1	95.1
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116	<10	<10	<10	<10
Bromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10	<10	<10	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M
1,3-Dichloropropane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## VOC MS (S)

Results Legend		Customer Sample Ref.	VC01B		VC01B		VC09B		VC09B	
#	ISO17025 accredited.		0.80 - 1.20	Soil/Solid (S)	1.24 - 1.54	Soil/Solid (S)	0.80 - 1.20	Soil/Solid (S)	1.26 - 1.66	Soil/Solid (S)
M	mCERTS accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 1.20	Soil/Solid (S)	1.24 - 1.54	Soil/Solid (S)	0.80 - 1.20	Soil/Solid (S)	1.26 - 1.66	Soil/Solid (S)
aq	Aqueous / settled sample.		20/04/2018	11:50:00	20/04/2018	11:50:00	19/04/2018	13:44:00	19/04/2018	13:44:00
diss.filt	Dissolved / filtered sample.		24/04/2018	180424-31	24/04/2018	180424-31	24/04/2018	180424-31	24/04/2018	180424-31
tot.unfilt	Total / unfiltered sample.		17431884		17431885		17431893		17431894	
*	Subcontracted test.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-5&*\$@	Sample deviation (see appendix)									
Component	LOD/Units		Method							
Tetrachloroethene	<5 µg/kg		TM116	<5	M	<5	M	<5	M	<5
Dibromochloromethane	<10 µg/kg	TM116	<10	M	<10	M	<10	M	<10	M
1,2-Dibromoethane	<10 µg/kg	TM116	<10	M	<10	M	<10	M	<10	M
Chlorobenzene	<5 µg/kg	TM116	<5	M	<5	M	<5	M	<5	M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10	M	<10	M	<10	M	<10	M
Ethylbenzene	<4 µg/kg	TM116	<4	M	<4	M	<4	M	<4	M
p/m-Xylene	<10 µg/kg	TM116	<10	#	<10	#	<10	#	<10	#
o-Xylene	<10 µg/kg	TM116	<10	M	<10	M	<10	M	<10	M
Styrene	<10 µg/kg	TM116	<10	#	<10	#	<10	#	<10	#
Bromoform	<10 µg/kg	TM116	<10	M	<10	M	<10	M	<10	M
Isopropylbenzene	<5 µg/kg	TM116	<5	#	<5	#	<5	#	<5	#
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10	#	<10	#	<10	#	<10	#
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16	M	<16	M	<16	M	<16	M
Bromobenzene	<10 µg/kg	TM116	<10	M	<10	M	<10	M	<10	M
Propylbenzene	<10 µg/kg	TM116	<10	M	<10	M	<10	M	<10	M
2-Chlorotoluene	<9 µg/kg	TM116	<9	M	<9	M	<9	M	<9	M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8	M	<8	M	<8	M	<8	M
4-Chlorotoluene	<10 µg/kg	TM116	<10	M	<10	M	<10	M	<10	M
tert-Butylbenzene	<14 µg/kg	TM116	<14	M	<14	M	<14	M	<14	M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9	#	<9	#	<9	#	<9	#
sec-Butylbenzene	<10 µg/kg	TM116	<10		<10		<10		<10	
4-Isopropyltoluene	<10 µg/kg	TM116	<10	M	<10	M	<10	M	<10	M
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8	M	<8	M	<8	M	<8	M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5	M	<5	M	<5	M	<5	M
n-Butylbenzene	<11 µg/kg	TM116	<11		<11		<11		<11	
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10	M	<10	M	<10	M	<10	M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14	M	<14	M	<14	M	<14	M
Tert-amyl methyl ether	<10 µg/kg	TM116	<10	#	<10	#	<10	#	<10	#
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20		<20		<20		<20	
Hexachlorobutadiene	<20 µg/kg	TM116	<20		<20		<20		<20	
Naphthalene	<13 µg/kg	TM116	<13	M	<13	M	<13	M	<13	M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<20	#	<20	#	<20	#	<20	#



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## Asbestos Identification - Solid Samples

	Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. VC02 Depth (m) 0.80 - 1.20 Sample Type SOLID Date Sampled 20/04/2018 00:00:00 Date Received 25/04/2018 20:42:27 SDG 180424-31 Original Sample 17431917 Method Number TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. VC02 Depth (m) 1.80 - 2.20 Sample Type SOLID Date Sampled 20/04/2018 00:00:00 Date Received 25/04/2018 20:50:19 SDG 180424-31 Original Sample 17431916 Method Number TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. VC02 Depth (m) 2.80 - 3.20 Sample Type SOLID Date Sampled 20/04/2018 00:00:00 Date Received 25/04/2018 13:06:46 SDG 180424-31 Original Sample 17431915 Method Number TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. VC02 Depth (m) 3.20 - 3.63 Sample Type SOLID Date Sampled 20/04/2018 00:00:00 Date Received 25/04/2018 13:08:45 SDG 180424-31 Original Sample 17431914 Method Number TM048	30/04/2018	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. VC03 Depth (m) 0.80 - 1.20 Sample Type SOLID Date Sampled 20/04/2018 00:00:00 Date Received 25/04/2018 09:52:24 SDG 180424-31 Original Sample 17431903 Method Number TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. VC03 Depth (m) 1.80 - 2.20 Sample Type SOLID Date Sampled 20/04/2018 00:00:00 Date Received 24/04/2018 18:23:11 SDG 180424-31 Original Sample 17431906 Method Number TM048	30/04/2018	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31      **Client Reference:** 62240712      **Report Number:** 457244  
**Location:** Lowestoft      **Order Number:** 62240712      **Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC03 2.80 - 3.20 SOLID 20/04/2018 00:00:00 25/04/2018 09:51:11 180424-31 17431905 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC03 3.39 - 3.79 SOLID 20/04/2018 00:00:00 24/04/2018 18:19:07 180424-31 17431904 TM048	30/04/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC04 0.80 - 1.20 SOLID 19/04/2018 00:00:00 24/04/2018 18:03:51 180424-31 17431908 TM048	30/04/2018	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC04 1.80 - 2.20 SOLID 19/04/2018 00:00:00 25/04/2018 20:47:33 180424-31 17431909 TM048	02/05/2018	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC04 2.80 - 3.20 SOLID 19/04/2018 00:00:00 24/04/2018 18:21:50 180424-31 17431910 TM048	30/04/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC04 3.60 - 4.00 SOLID 19/04/2018 00:00:00 25/04/2018 20:51:56 180424-31 17431907 TM048	02/05/2018	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31      **Client Reference:** 62240712      **Report Number:** 457244  
**Location:** Lowestoft      **Order Number:** 62240712      **Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC05 0.80 - 1.20 SOLID 19/04/2018 00:00:00 25/04/2018 08:27:11 180424-31 17431895 TM048	01/05/2018	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC05 1.80 - 2.20 SOLID 19/04/2018 00:00:00 25/04/2018 20:45:16 180424-31 17431896 TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC05 2.53 - 2.93 SOLID 19/04/2018 00:00:00 25/04/2018 08:23:57 180424-31 17431898 TM048	30/04/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC06 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 20:43:48 180424-31 17431899 TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC06 2.00 - 2.46 SOLID 20/04/2018 00:00:00 25/04/2018 15:08:49 180424-31 17431900 TM048	02/05/2018	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC07 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 14:53:52 180424-31 17431883 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31      **Client Reference:** 62240712      **Report Number:** 457244  
**Location:** Lowestoft      **Order Number:** 62240712      **Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC07 1.60 - 2.00 SOLID 20/04/2018 00:00:00 25/04/2018 14:52:46 180424-31 17431882 TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC08 0.60 - 1.00 SOLID 20/04/2018 00:00:00 25/04/2018 09:49:32 180424-31 17431902 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC08 1.00 - 1.45 SOLID 20/04/2018 00:00:00 25/04/2018 20:41:09 180424-31 17431901 TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC11 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 08:35:34 180424-31 17431887 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC11 1.80 - 2.20 SOLID 20/04/2018 00:00:00 25/04/2018 08:38:06 180424-31 17431886 TM048	01/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC11 2.20 - 2.50 SOLID 20/04/2018 00:00:00 25/04/2018 13:01:12 180424-31 17431889 TM048	30/04/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



# CERTIFICATE OF ANALYSIS

Validated

<b>SDG:</b> 180424-31	<b>Client Reference:</b> 62240712	<b>Report Number:</b> 457244
<b>Location:</b> Lowestoft	<b>Order Number:</b> 62240712	<b>Superseded Report:</b>

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC10A 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 08:39:49 180424-31 17431891 TM048	01/05/2018	Lucy Caroe	Loose fibres in soil	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC10A 1.80 - 2.20 SOLID 20/04/2018 00:00:00 24/04/2018 17:53:03 180424-31 17431890 TM048	01/05/2018	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC10A 2.45 - 2.85 SOLID 20/04/2018 00:00:00 25/04/2018 08:41:53 180424-31 17431892 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC12A 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 12:59:32 180424-31 17431913 TM048	01/05/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Trace
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC12A 1.80 - 2.20 SOLID 20/04/2018 00:00:00 25/04/2018 20:48:59 180424-31 17431911 TM048	02/05/2018	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC12A 2.80 - 3.30 SOLID 20/04/2018 00:00:00 24/04/2018 18:20:21 180424-31 17431912 TM048	30/04/2018	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC01B 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 14:56:21 180424-31 17431884 TM048	02/05/2018	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC01B 1.24 - 1.54 SOLID 20/04/2018 00:00:00 25/04/2018 14:57:45 180424-31 17431885 TM048	02/05/2018	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC09B 0.80 - 1.20 SOLID 19/04/2018 00:00:00 25/04/2018 08:25:40 180424-31 17431893 TM048	30/04/2018	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	VC09B 1.26 - 1.66 SOLID 19/04/2018 00:00:00 25/04/2018 08:30:37 180424-31 17431894 TM048	30/04/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected





# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.103
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	14.9
<b>Dry Matter Content (%)</b>	87

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431882
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC07
<b>Depth (m)</b>	1.60 - 2.00

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.11
ANC to pH 6 (mol/kg)	0.0353
ANC to pH 4 (mol/kg)	0.0567

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00395	<0.0005	0.0395	<0.005	0.5	2	25
Barium	0.00297	<0.0002	0.0297	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00228	<0.001	0.0228	<0.01	0.5	10	70
Copper	0.00212	<0.0003	0.0212	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00126	<0.0004	0.0126	<0.004	0.4	10	40
Lead	0.00204	<0.0002	0.0204	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00352	<0.001	0.0352	<0.01	4	50	200
Chloride	3.2	<2	32	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	26.7	<5	267	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.33
Conductivity (µS/cm)	20.30
Temperature (°C)	19.90
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.107
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	19
<b>Dry Matter Content (%)</b>	84

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431883
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC07
<b>Depth (m)</b>	0.80 - 1.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.08
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0389

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00273	<0.0005	0.0273	<0.005	0.5	2	25
Barium	0.00111	<0.0002	0.0111	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000555	<0.0003	0.00555	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000599	<0.0004	0.00599	<0.004	0.4	10	40
Lead	0.000669	<0.0002	0.00669	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00105	<0.001	0.0105	<0.01	4	50	200
Chloride	2.7	<2	27	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	17.5	<5	175	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

### Leach Test Information

<b>Date Prepared</b>	26-Apr-2018
<b>pH (pH Units)</b>	7.93
<b>Conductivity (µS/cm)</b>	17.70
<b>Temperature (°C)</b>	20.00
<b>Volume Leachant (Litres)</b>	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	Lowestoft	<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.107	<b>Natural Moisture Content (%)</b>	19
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	84
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431884
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC01B
<b>Depth (m)</b>	0.80 - 1.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.28
ANC to pH 6 (mol/kg)	0.0318
ANC to pH 4 (mol/kg)	0.08

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.0072	<0.0005	0.072	<0.005	0.5	2	25
Barium	0.00378	<0.0002	0.0378	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00566	<0.001	0.0566	<0.01	0.5	10	70
Copper	0.0104	<0.0003	0.104	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00504	<0.003	0.0504	<0.03	0.5	10	30
Nickel	0.00479	<0.0004	0.0479	<0.004	0.4	10	40
Lead	0.00525	<0.0002	0.0525	<0.002	0.5	10	50
Antimony	0.00145	<0.001	0.0145	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0115	<0.001	0.115	<0.01	4	50	200
Chloride	11.2	<2	112	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	53.7	<5	537	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.03	<3	70.3	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.48
Conductivity (µS/cm)	66.20
Temperature (°C)	20.10
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>		<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.105	<b>Natural Moisture Content (%)</b>	16.3
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	86
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431885
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC01B
<b>Depth (m)</b>	1.24 - 1.54

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.93
ANC to pH 6 (mol/kg)	0.0324
ANC to pH 4 (mol/kg)	0.0475

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.00551	<0.0005	0.0551	<0.005	0.5	2	25
Barium	0.00204	<0.0002	0.0204	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00122	<0.001	0.0122	<0.01	0.5	10	70
Copper	0.00342	<0.0003	0.0342	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00116	<0.0004	0.0116	<0.004	0.4	10	40
Lead	0.000973	<0.0002	0.00973	<0.002	0.5	10	50
Antimony	0.0011	<0.001	0.011	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00279	<0.001	0.0279	<0.01	4	50	200
Chloride	5.6	<2	56	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	40.5	<5	405	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.14	<3	51.4	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.54
Conductivity (µS/cm)	48.30
Temperature (°C)	19.90
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.106
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	17.6
<b>Dry Matter Content (%)</b>	85

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431886
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC11
<b>Depth (m)</b>	1.80 - 2.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.4
ANC to pH 6 (mol/kg)	0.0522
ANC to pH 4 (mol/kg)	0.0715

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0069	<0.0005	0.069	<0.005	0.5	2	25
Barium	0.000795	<0.0002	0.00795	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00112	<0.0003	0.0112	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000467	<0.0004	0.00467	<0.004	0.4	10	40
Lead	0.00074	<0.0002	0.0074	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	3	<2	30	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	18.4	<5	184	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.92
Conductivity (µS/cm)	20.30
Temperature (°C)	20.10
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
 Location: Lowestoft

Client Reference: 62240712  
 Order Number: 62240712

Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

**Client Reference**  
**Mass Sample taken (kg)** 0.122  
**Mass of dry sample (kg)** 0.090  
**Particle Size <4mm** >95%

**Site Location** Lowestoft  
**Natural Moisture Content (%)** 35.8  
**Dry Matter Content (%)** 73.7

**Case**  
**SDG** 180424-31  
**Lab Sample Number(s)** 17431887  
**Sampled Date** 20-Apr-2018  
**Customer Sample Ref.** VC11  
**Depth (m)** 0.80 - 1.20

### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.54
Loss on Ignition (%)	2.71
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	94
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.65
ANC to pH 6 (mol/kg)	0.185
ANC to pH 4 (mol/kg)	2.19

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.0205	<0.0005	0.205	<0.005	0.5	2	25
Barium	0.0285	<0.0002	0.285	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.01	<0.001	0.1	<0.01	0.5	10	70
Copper	0.00849	<0.0003	0.0849	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0158	<0.003	0.158	<0.03	0.5	10	30
Nickel	0.00656	<0.0004	0.0656	<0.004	0.4	10	40
Lead	0.00923	<0.0002	0.0923	<0.002	0.5	10	50
Antimony	0.00197	<0.001	0.0197	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0191	<0.001	0.191	<0.01	4	50	200
Chloride	179	<2	1790	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	24.8	<2	248	<20	1000	20000	50000
Total Dissolved Solids	592	<5	5920	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	10.9	<3	109	<30	500	800	1000

### Leach Test Information

**Date Prepared** 27-Apr-2018  
**pH (pH Units)** 7.90  
**Conductivity (µS/cm)** 765.00  
**Temperature (°C)** 19.90  
**Volume Leachant (Litres)** 0.868

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	Lowestoft	<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.107	<b>Natural Moisture Content (%)</b>	19
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	84
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431889
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC11
<b>Depth (m)</b>	2.20 - 2.50

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.76
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0734

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.00653	<0.0005	0.0653	<0.005	0.5	2	25
Barium	0.00204	<0.0002	0.0204	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00184	<0.001	0.0184	<0.01	0.5	10	70
Copper	0.000954	<0.0003	0.00954	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00135	<0.0004	0.0135	<0.004	0.4	10	40
Lead	0.00237	<0.0002	0.0237	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00292	<0.001	0.0292	<0.01	4	50	200
Chloride	2.8	<2	28	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	42.3	<5	423	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.78	<3	47.8	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.83
Conductivity (µS/cm)	18.60
Temperature (°C)	18.50
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.103
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	14.9
<b>Dry Matter Content (%)</b>	87

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431890
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC10A
<b>Depth (m)</b>	1.80 - 2.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	0.728
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.22
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0449

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0149	<0.0005	0.149	<0.005	0.5	2	25
Barium	0.00126	<0.0002	0.0126	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000387	<0.0003	0.00387	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000945	<0.0004	0.00945	<0.004	0.4	10	40
Lead	0.000573	<0.0002	0.00573	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00132	<0.001	0.0132	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	7.1	<2	71	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	46.9	<5	469	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.31	<3	43.1	<30	500	800	1000

### Leach Test Information

<b>Date Prepared</b>	26-Apr-2018
<b>pH (pH Units)</b>	8.46
<b>Conductivity (µS/cm)</b>	56.60
<b>Temperature (°C)</b>	20.10
<b>Volume Leachant (Litres)</b>	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018





# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.180
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	100
<b>Dry Matter Content (%)</b>	49.9

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431891
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC10A
<b>Depth (m)</b>	0.80 - 1.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	-
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.26
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	79.9
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.75
ANC to pH 6 (mol/kg)	0.198
ANC to pH 4 (mol/kg)	2.12

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0359	<0.0005	0.359	<0.005	0.5	2	25
Barium	0.03	<0.0002	0.3	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00526	<0.001	0.0526	<0.01	0.5	10	70
Copper	0.00971	<0.0003	0.0971	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.033	<0.003	0.33	<0.03	0.5	10	30
Nickel	0.00847	<0.0004	0.0847	<0.004	0.4	10	40
Lead	0.00521	<0.0002	0.0521	<0.002	0.5	10	50
Antimony	0.0036	<0.001	0.036	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0138	<0.001	0.138	<0.01	4	50	200
Chloride	676	<10	6760	<100	800	15000	25000
Fluoride	0.714	<0.5	7.14	<5	10	150	500
Sulphate (soluble)	4	<2	40	<20	1000	20000	50000
Total Dissolved Solids	1810	<5	18100	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	25.7	<3	257	<30	500	800	1000

### Leach Test Information

Date Prepared	27-Apr-2018
pH (pH Units)	8.46
Conductivity (µS/cm)	2,710.00
Temperature (°C)	19.70
Volume Leachant (Litres)	0.810

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	Lowestoft	<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.107	<b>Natural Moisture Content (%)</b>	19
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	84
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431892
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC10A
<b>Depth (m)</b>	2.45 - 2.85

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	12.3
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.1
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0553

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.00909	<0.0005	0.0909	<0.005	0.5	2	25
Barium	0.00207	<0.0002	0.0207	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00201	<0.001	0.0201	<0.01	0.5	10	70
Copper	0.00271	<0.0003	0.0271	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00304	<0.0004	0.0304	<0.004	0.4	10	40
Lead	0.00189	<0.0002	0.0189	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00393	<0.001	0.0393	<0.01	4	50	200
Chloride	5.4	<2	54	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	28	<5	280	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.72	<3	47.2	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.25
Conductivity (µS/cm)	32.20
Temperature (°C)	20.00
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	Lowestoft	<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.123	<b>Natural Moisture Content (%)</b>	37
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	73
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431893
<b>Sampled Date</b>	19-Apr-2018
<b>Customer Sample Ref.</b>	VC09B
<b>Depth (m)</b>	0.80 - 1.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.327
Loss on Ignition (%)	13.5
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	8.36
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	6.15
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.104

Eluate Analysis	C2 Conc <sup>n</sup> in 10:1 eluate (mg/l)		A2 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.00691	<0.0005	0.0691	<0.005	0.5	2	25
Barium	0.00534	<0.0002	0.0534	<0.002	20	100	300
Cadmium	0.000341	<0.00008	0.00341	<0.0008	0.04	1	5
Chromium	0.00148	<0.001	0.0148	<0.01	0.5	10	70
Copper	0.00459	<0.0003	0.0459	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.0025	<0.0004	0.025	<0.004	0.4	10	40
Lead	0.0013	<0.0002	0.013	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00957	<0.001	0.0957	<0.01	4	50	200
Chloride	16	<2	160	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	10.4	<2	104	<20	1000	20000	50000
Total Dissolved Solids	98	<5	980	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.93	<3	59.3	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.09
Conductivity (µS/cm)	124.00
Temperature (°C)	19.80
Volume Leachant (Litres)	0.867

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

**REF : BS EN 12457/2**

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.104
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	16.3
<b>Dry Matter Content (%)</b>	86

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431894
<b>Sampled Date</b>	19-Apr-2018
<b>Customer Sample Ref.</b>	VC09B
<b>Depth (m)</b>	1.26 - 1.66

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	6.64
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0853

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00342	<0.0005	0.0342	<0.005	0.5	2	25
Barium	0.00451	<0.0002	0.0451	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.0145	<0.001	0.145	<0.01	0.5	10	70
Copper	0.00691	<0.0003	0.0691	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00552	<0.0004	0.0552	<0.004	0.4	10	40
Lead	0.00181	<0.0002	0.0181	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00342	<0.001	0.0342	<0.01	4	50	200
Chloride	5.7	<2	57	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	25	<5	250	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.8	<3	78	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.67
Conductivity (µS/cm)	27.20
Temperature (°C)	20.20
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>		<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.161	<b>Natural Moisture Content (%)</b>	78.6
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	56
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431895
<b>Sampled Date</b>	19-Apr-2018
<b>Customer Sample Ref.</b>	VC05
<b>Depth (m)</b>	0.80 - 1.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.56
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	59.7
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.54
ANC to pH 6 (mol/kg)	0.247
ANC to pH 4 (mol/kg)	2.46

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.0213	<0.0005	0.213	<0.005	0.5	2	25
Barium	0.0448	<0.0002	0.448	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00429	<0.0003	0.0429	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0235	<0.003	0.235	<0.03	0.5	10	30
Nickel	0.00447	<0.0004	0.0447	<0.004	0.4	10	40
Lead	0.00261	<0.0002	0.0261	<0.002	0.5	10	50
Antimony	0.00221	<0.001	0.0221	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00803	<0.001	0.0803	<0.01	4	50	200
Chloride	1160	<20	11600	<200	800	15000	25000
Fluoride	0.62	<0.5	6.2	<5	10	150	500
Sulphate (soluble)	18.2	<2	182	<20	1000	20000	50000
Total Dissolved Solids	2950	<20	29500	<200	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	17.7	<3	177	<30	500	800	1000

### Leach Test Information

Date Prepared	27-Apr-2018
pH (pH Units)	8.13
Conductivity (µS/cm)	3,740.00
Temperature (°C)	19.70
Volume Leachant (Litres)	0.829

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.107
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	19
<b>Dry Matter Content (%)</b>	84

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431896
<b>Sampled Date</b>	19-Apr-2018
<b>Customer Sample Ref.</b>	VC05
<b>Depth (m)</b>	1.80 - 2.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	1.5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.91
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0767

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00221	<0.0005	0.0221	<0.005	0.5	2	25
Barium	0.0163	<0.0002	0.163	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00145	<0.0003	0.0145	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00211	<0.0004	0.0211	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00173	<0.001	0.0173	<0.01	4	50	200
Chloride	113	<2	1130	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	4.1	<2	41	<20	1000	20000	50000
Total Dissolved Solids	395	<5	3950	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.16	<3	31.6	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.65
Conductivity (µS/cm)	518.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	Lowestoft	<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.107	<b>Natural Moisture Content (%)</b>	19
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	84
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431898
<b>Sampled Date</b>	19-Apr-2018
<b>Customer Sample Ref.</b>	VC05
<b>Depth (m)</b>	2.53 - 2.93

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	2.24
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	20.7
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	6.27
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0849

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.0141	<0.0005	0.141	<0.005	0.5	2	25
Barium	0.0169	<0.0002	0.169	<0.002	20	100	300
Cadmium	0.0000959	<0.00008	0.000959	<0.0008	0.04	1	5
Chromium	0.00364	<0.001	0.0364	<0.01	0.5	10	70
Copper	0.0137	<0.0003	0.137	<0.003	2	50	100
Mercury Dissolved (CVAf)	0.0000439	<0.00001	0.000439	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00557	<0.0004	0.0557	<0.004	0.4	10	40
Lead	0.0185	<0.0002	0.185	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00178	<0.001	0.0178	<0.01	0.1	0.5	7
Zinc	0.109	<0.001	1.09	<0.01	4	50	200
Chloride	12.5	<2	125	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	5.8	<2	58	<20	1000	20000	50000
Total Dissolved Solids	33.2	<5	332	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.64
Conductivity (µS/cm)	39.40
Temperature (°C)	19.40
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.145
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	61.3
<b>Dry Matter Content (%)</b>	62

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431899
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC06
<b>Depth (m)</b>	0.80 - 1.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.68
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	62.4
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.48
ANC to pH 6 (mol/kg)	0.223
ANC to pH 4 (mol/kg)	2.13

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0169	<0.0005	0.169	<0.005	0.5	2	25
Barium	0.0192	<0.0002	0.192	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00289	<0.0003	0.0289	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0209	<0.003	0.209	<0.03	0.5	10	30
Nickel	0.00464	<0.0004	0.0464	<0.004	0.4	10	40
Lead	0.000626	<0.0002	0.00626	<0.002	0.5	10	50
Antimony	0.00275	<0.001	0.0275	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00148	<0.001	0.0148	<0.01	4	50	200
Chloride	366	<4	3660	<40	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	1080	<5	10800	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	24.1	<3	241	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.32
Conductivity (µS/cm)	1,420.00
Temperature (°C)	20.20
Volume Leachant (Litres)	0.845

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018





# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	Lowestoft	<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.092	<b>Natural Moisture Content (%)</b>	1.83
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	98.2
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431900
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC06
<b>Depth (m)</b>	2.00 - 2.46

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	9.01
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0908

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.0112	<0.0005	0.112	<0.005	0.5	2	25
Barium	0.00329	<0.0002	0.0329	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00325	<0.001	0.0325	<0.01	0.5	10	70
Copper	0.00438	<0.0003	0.0438	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00388	<0.003	0.0388	<0.03	0.5	10	30
Nickel	0.00158	<0.0004	0.0158	<0.004	0.4	10	40
Lead	0.00156	<0.0002	0.0156	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00343	<0.001	0.0343	<0.01	4	50	200
Chloride	12.7	<2	127	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	64.1	<5	641	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.23	<3	62.3	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.87
Conductivity (µS/cm)	62.90
Temperature (°C)	19.90
Volume Leachant (Litres)	0.898

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.105
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	16.3
<b>Dry Matter Content (%)</b>	86

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431901
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC08
<b>Depth (m)</b>	1.00 - 1.45

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.56
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0826

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00362	<0.0005	0.0362	<0.005	0.5	2	25
Barium	0.00512	<0.0002	0.0512	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00477	<0.001	0.0477	<0.01	0.5	10	70
Copper	0.000852	<0.0003	0.00852	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00281	<0.0004	0.0281	<0.004	0.4	10	40
Lead	0.000305	<0.0002	0.00305	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	74.5	<2	745	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	10.3	<2	103	<20	1000	20000	50000
Total Dissolved Solids	224	<5	2240	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.10
Conductivity (µS/cm)	285.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.108
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	20.5
<b>Dry Matter Content (%)</b>	83

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431902
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC08
<b>Depth (m)</b>	0.60 - 1.00

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	1.16
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.97
ANC to pH 6 (mol/kg)	0.0375
ANC to pH 4 (mol/kg)	0.059

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00823	<0.0005	0.0823	<0.005	0.5	2	25
Barium	0.00549	<0.0002	0.0549	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000726	<0.0003	0.00726	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00425	<0.003	0.0425	<0.03	0.5	10	30
Nickel	0.000502	<0.0004	0.00502	<0.004	0.4	10	40
Lead	0.000444	<0.0002	0.00444	<0.002	0.5	10	50
Antimony	0.00177	<0.001	0.0177	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	56	<2	560	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	4.4	<2	44	<20	1000	20000	50000
Total Dissolved Solids	183	<5	1830	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.03	<3	40.3	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.18
Conductivity (µS/cm)	239.00
Temperature (°C)	20.20
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.167
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	85.2
<b>Dry Matter Content (%)</b>	54

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431903
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC03
<b>Depth (m)</b>	0.80 - 1.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.37
Loss on Ignition (%)	6.91
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	56.1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.62
ANC to pH 6 (mol/kg)	0.227
ANC to pH 4 (mol/kg)	2.02

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.035	<0.0005	0.35	<0.005	0.5	2	25
Barium	0.0286	<0.0002	0.286	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00283	<0.0003	0.0283	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.021	<0.003	0.21	<0.03	0.5	10	30
Nickel	0.00298	<0.0004	0.0298	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00127	<0.001	0.0127	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0056	<0.001	0.056	<0.01	4	50	200
Chloride	588	<10	5880	<100	800	15000	25000
Fluoride	0.614	<0.5	6.14	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	1610	<5	16100	<50	4000	60000	100000
Total Monohydric Phenols (W)	0.02	<0.016	0.2	<0.16	1	-	-
Dissolved Organic Carbon	22	<3	220	<30	500	800	1000

### Leach Test Information

Date Prepared	27-Apr-2018
pH (pH Units)	8.30
Conductivity (µS/cm)	2,290.00
Temperature (°C)	19.40
Volume Leachant (Litres)	0.823

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.103
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	14.9
<b>Dry Matter Content (%)</b>	87

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431904
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC03
<b>Depth (m)</b>	3.39 - 3.79

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	5.78
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0866

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00688	<0.0005	0.0688	<0.005	0.5	2	25
Barium	0.112	<0.0002	1.12	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00231	<0.001	0.0231	<0.01	0.5	10	70
Copper	0.00263	<0.0003	0.0263	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00228	<0.0004	0.0228	<0.004	0.4	10	40
Lead	0.00167	<0.0002	0.0167	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00362	<0.001	0.0362	<0.01	0.1	0.5	7
Zinc	0.0148	<0.001	0.148	<0.01	4	50	200
Chloride	7.3	<2	73	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	49.3	<5	493	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	8.36	<3	83.6	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.42
Conductivity (µS/cm)	44.70
Temperature (°C)	20.10
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	Lowestoft	<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.117	<b>Natural Moisture Content (%)</b>	29.9
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	77
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431905
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC03
<b>Depth (m)</b>	2.80 - 3.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.414
Loss on Ignition (%)	9.71
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	7.57
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	6.26
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0825

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.00378	<0.0005	0.0378	<0.005	0.5	2	25
Barium	0.0096	<0.0002	0.096	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000823	<0.0003	0.00823	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00775	<0.0004	0.0775	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00193	<0.001	0.0193	<0.01	4	50	200
Chloride	8.8	<2	88	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	3.7	<2	37	<20	1000	20000	50000
Total Dissolved Solids	128	<5	1280	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.83	<3	38.3	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.31
Conductivity (µS/cm)	162.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.873

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.113
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	25
<b>Dry Matter Content (%)</b>	80

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431906
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC03
<b>Depth (m)</b>	1.80 - 2.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	1.04
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	3.87
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.08
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0787

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00436	<0.0005	0.0436	<0.005	0.5	2	25
Barium	0.00322	<0.0002	0.0322	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00135	<0.0003	0.0135	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000709	<0.0004	0.00709	<0.004	0.4	10	40
Lead	0.000574	<0.0002	0.00574	<0.002	0.5	10	50
Antimony	0.00133	<0.001	0.0133	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00113	<0.001	0.0113	<0.01	4	50	200
Chloride	15	<2	150	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	78.5	<5	785	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.15	<3	31.5	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.35
Conductivity (µS/cm)	100.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.878

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.103
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	14.9
<b>Dry Matter Content (%)</b>	87

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431907
<b>Sampled Date</b>	19-Apr-2018
<b>Customer Sample Ref.</b>	VC04
<b>Depth (m)</b>	3.60 - 4.00

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	6.18
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0635

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00381	<0.0005	0.0381	<0.005	0.5	2	25
Barium	0.0033	<0.0002	0.033	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00184	<0.001	0.0184	<0.01	0.5	10	70
Copper	0.00536	<0.0003	0.0536	<0.003	2	50	100
Mercury Dissolved (CVAf)	0.0000123	<0.00001	0.000123	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00115	<0.0004	0.0115	<0.004	0.4	10	40
Lead	0.00249	<0.0002	0.0249	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00295	<0.001	0.0295	<0.01	4	50	200
Chloride	14.1	<2	141	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	66.8	<5	668	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.23	<3	32.3	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.80
Conductivity (µS/cm)	53.60
Temperature (°C)	20.00
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018





# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.111
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	23.5
<b>Dry Matter Content (%)</b>	81

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431908
<b>Sampled Date</b>	19-Apr-2018
<b>Customer Sample Ref.</b>	VC04
<b>Depth (m)</b>	0.80 - 1.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	1.96
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	5.09
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.69
ANC to pH 6 (mol/kg)	0.0537
ANC to pH 4 (mol/kg)	0.0799

Eluate Analysis	C2 Conc <sup>n</sup> in 10:1 eluate (mg/l)		A2 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00379	<0.0005	0.0379	<0.005	0.5	2	25
Barium	0.00958	<0.0002	0.0958	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00198	<0.0003	0.0198	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00881	<0.003	0.0881	<0.03	0.5	10	30
Nickel	0.00177	<0.0004	0.0177	<0.004	0.4	10	40
Lead	0.001	<0.0002	0.01	<0.002	0.5	10	50
Antimony	0.00168	<0.001	0.0168	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	45.6	<2	456	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	2.3	<2	23	<20	1000	20000	50000
Total Dissolved Solids	172	<5	1720	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.23	<3	42.3	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.08
Conductivity (µS/cm)	218.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.879

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.106
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	17.6
<b>Dry Matter Content (%)</b>	85

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431909
<b>Sampled Date</b>	19-Apr-2018
<b>Customer Sample Ref.</b>	VC04
<b>Depth (m)</b>	1.80 - 2.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.42
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0369

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00634	<0.0005	0.0634	<0.005	0.5	2	25
Barium	0.00406	<0.0002	0.0406	<0.002	20	100	300
Cadmium	0.000131	<0.00008	0.00131	<0.0008	0.04	1	5
Chromium	0.0107	<0.001	0.107	<0.01	0.5	10	70
Copper	0.00943	<0.0003	0.0943	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00639	<0.0004	0.0639	<0.004	0.4	10	40
Lead	0.00739	<0.0002	0.0739	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0192	<0.001	0.192	<0.01	4	50	200
Chloride	18	<2	180	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	60.7	<5	607	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.16	<3	71.6	<30	500	800	1000

### Leach Test Information

<b>Date Prepared</b>	26-Apr-2018
<b>pH (pH Units)</b>	8.09
<b>Conductivity (µS/cm)</b>	73.60
<b>Temperature (°C)</b>	18.40
<b>Volume Leachant (Litres)</b>	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.103
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	14.9
<b>Dry Matter Content (%)</b>	87

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431910
<b>Sampled Date</b>	19-Apr-2018
<b>Customer Sample Ref.</b>	VC04
<b>Depth (m)</b>	2.80 - 3.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	0.854
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.49
ANC to pH 6 (mol/kg)	0.0388
ANC to pH 4 (mol/kg)	0.0605

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00843	<0.0005	0.0843	<0.005	0.5	2	25
Barium	0.00643	<0.0002	0.0643	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00144	<0.0003	0.0144	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00581	<0.0004	0.0581	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00456	<0.001	0.0456	<0.01	4	50	200
Chloride	28.1	<2	281	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	2.9	<2	29	<20	1000	20000	50000
Total Dissolved Solids	163	<5	1630	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.52	<3	45.2	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.41
Conductivity (µS/cm)	213.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>		<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.102	<b>Natural Moisture Content (%)</b>	13.6
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	88
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431911
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC12A
<b>Depth (m)</b>	1.80 - 2.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	6.49
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.77
ANC to pH 6 (mol/kg)	0.0344
ANC to pH 4 (mol/kg)	0.0497

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.00534	<0.0005	0.0534	<0.005	0.5	2	25
Barium	0.00226	<0.0002	0.0226	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000939	<0.0003	0.00939	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000878	<0.0004	0.00878	<0.004	0.4	10	40
Lead	0.00106	<0.0002	0.0106	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00119	<0.001	0.0119	<0.01	0.1	0.5	7
Zinc	0.00123	<0.001	0.0123	<0.01	4	50	200
Chloride	13.6	<2	136	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	60.8	<5	608	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.95	<3	49.5	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.86
Conductivity (µS/cm)	74.20
Temperature (°C)	20.10
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.110
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	22
<b>Dry Matter Content (%)</b>	82

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431912
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC12A
<b>Depth (m)</b>	2.80 - 3.30

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	1.54
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	6.2
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.68
ANC to pH 6 (mol/kg)	0.0407
ANC to pH 4 (mol/kg)	0.0616

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00959	<0.0005	0.0959	<0.005	0.5	2	25
Barium	0.0028	<0.0002	0.028	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00494	<0.0003	0.0494	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00903	<0.003	0.0903	<0.03	0.5	10	30
Nickel	0.00217	<0.0004	0.0217	<0.004	0.4	10	40
Lead	0.0016	<0.0002	0.016	<0.002	0.5	10	50
Antimony	0.00549	<0.001	0.0549	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00153	<0.001	0.0153	<0.01	4	50	200
Chloride	13.2	<2	132	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	53.7	<5	537	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.85	<3	58.5	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.22
Conductivity (µS/cm)	66.20
Temperature (°C)	20.00
Volume Leachant (Litres)	0.880

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.155
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	72.4
<b>Dry Matter Content (%)</b>	58

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431913
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC12A
<b>Depth (m)</b>	0.80 - 1.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.55
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	184
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.55
ANC to pH 6 (mol/kg)	0.177
ANC to pH 4 (mol/kg)	1.74

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0438	<0.0005	0.438	<0.005	0.5	2	25
Barium	0.0161	<0.0002	0.161	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00503	<0.001	0.0503	<0.01	0.5	10	70
Copper	0.0017	<0.0003	0.017	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0239	<0.003	0.239	<0.03	0.5	10	30
Nickel	0.00496	<0.0004	0.0496	<0.004	0.4	10	40
Lead	0.000316	<0.0002	0.00316	<0.002	0.5	10	50
Antimony	0.0029	<0.001	0.029	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00533	<0.001	0.0533	<0.01	4	50	200
Chloride	379	<4	3790	<40	800	15000	25000
Fluoride	0.516	<0.5	5.16	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	1120	<5	11200	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	20	<3	200	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.61
Conductivity (µS/cm)	1,440.00
Temperature (°C)	18.20
Volume Leachant (Litres)	0.835

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.115
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	28.2
<b>Dry Matter Content (%)</b>	78

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431914
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC02
<b>Depth (m)</b>	3.20 - 3.63

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.552
Loss on Ignition (%)	11.5
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	7.47
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	6.73
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0986

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00242	<0.0005	0.0242	<0.005	0.5	2	25
Barium	0.0133	<0.0002	0.133	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00318	<0.0003	0.0318	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00884	<0.0004	0.0884	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00809	<0.001	0.0809	<0.01	4	50	200
Chloride	21.1	<2	211	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	4.5	<2	45	<20	1000	20000	50000
Total Dissolved Solids	184	<5	1840	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.17	<3	41.7	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.38
Conductivity (µS/cm)	243.00
Temperature (°C)	19.80
Volume Leachant (Litres)	0.875

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	Lowestoft	<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.123	<b>Natural Moisture Content (%)</b>	37
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	73
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431915
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC02
<b>Depth (m)</b>	2.80 - 3.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.78
Loss on Ignition (%)	5.27
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	19.2
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	5.77
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.101

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.0136	<0.0005	0.136	<0.005	0.5	2	25
Barium	0.0104	<0.0002	0.104	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.0052	<0.001	0.052	<0.01	0.5	10	70
Copper	0.00656	<0.0003	0.0656	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00272	<0.0004	0.0272	<0.004	0.4	10	40
Lead	0.00184	<0.0002	0.0184	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00957	<0.001	0.0957	<0.01	4	50	200
Chloride	21.3	<2	213	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	6.5	<2	65	<20	1000	20000	50000
Total Dissolved Solids	92.2	<5	922	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.16	<3	51.6	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.20
Conductivity (µS/cm)	117.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.867

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018





# CERTIFICATE OF ANALYSIS

Validated

 SDG: 180424-31  
 Location: Lowestoft

 Client Reference: 62240712  
 Order Number: 62240712

 Report Number: 457244  
 Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	Lowestoft	<b>Site Location</b>	Lowestoft
<b>Mass Sample taken (kg)</b>	0.105	<b>Natural Moisture Content (%)</b>	16.3
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	86
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431916
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC02
<b>Depth (m)</b>	1.80 - 2.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.32
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.0613

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.0109	<0.0005	0.109	<0.005	0.5	2	25
Barium	0.00347	<0.0002	0.0347	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00225	<0.0003	0.0225	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0113	<0.003	0.113	<0.03	0.5	10	30
Nickel	0.00104	<0.0004	0.0104	<0.004	0.4	10	40
Lead	0.000231	<0.0002	0.00231	<0.002	0.5	10	50
Antimony	0.00281	<0.001	0.0281	<0.01	0.06	0.7	5
Selenium	0.00127	<0.001	0.0127	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	23.2	<2	232	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	138	<5	1380	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.49	<3	64.9	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.92
Conductivity (µS/cm)	157.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates  
 22/05/2018 17:18:21



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

<b>Client Reference</b>	
<b>Mass Sample taken (kg)</b>	0.101
<b>Mass of dry sample (kg)</b>	0.090
<b>Particle Size &lt;4mm</b>	>95%

<b>Site Location</b>	Lowestoft
<b>Natural Moisture Content (%)</b>	12.4
<b>Dry Matter Content (%)</b>	89

<b>Case</b>	
<b>SDG</b>	180424-31
<b>Lab Sample Number(s)</b>	17431917
<b>Sampled Date</b>	20-Apr-2018
<b>Customer Sample Ref.</b>	VC02
<b>Depth (m)</b>	0.80 - 1.20

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.235
Loss on Ignition (%)	6.24
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	13.2
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.5
ANC to pH 6 (mol/kg)	0.0689
ANC to pH 4 (mol/kg)	0.157

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0128	<0.0005	0.128	<0.005	0.5	2	25
Barium	0.00729	<0.0002	0.0729	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00126	<0.001	0.0126	<0.01	0.5	10	70
Copper	0.00351	<0.0003	0.0351	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00536	<0.003	0.0536	<0.03	0.5	10	30
Nickel	0.00179	<0.0004	0.0179	<0.004	0.4	10	40
Lead	0.00183	<0.0002	0.0183	<0.002	0.5	10	50
Antimony	0.00369	<0.001	0.0369	<0.01	0.06	0.7	5
Selenium	0.00128	<0.001	0.0128	<0.01	0.1	0.5	7
Zinc	0.00319	<0.001	0.0319	<0.01	4	50	200
Chloride	119	<2	1190	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	374	<5	3740	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.17	<3	71.7	<30	500	800	1000

### Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.54
Conductivity (µS/cm)	491.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates

22/05/2018 17:18:21

17:17:48 22/05/2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## Notification of NDPs (No determination possible)

Date Received : 24/04/2018 11:01:28

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
17431891	VC10A	0.80 - 1.20	Loss on Ignition in soils	Unsuitable sample for analysis
17431891	VC10A	0.80 - 1.20	Polybrominated Diphenyl Ethers*	Unsuitable sample for analysis
17431891	VC10A	0.80 - 1.20	Passing Through >63µm sieve	Unsuitable sample for analysis



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

## Table of Results - Appendix

Method No	Reference	Description
ASB_PREP		
PM001		Preparation of Samples for Metals Analysis
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TBC		
TM008	BS 1377:Part 1977	Particle size distribution of solid samples
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM019	Modified: US EPA Method 9056	Determination of Anions in Soils using Ion Chromatography
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	CEN/TC 292 - WI 292046-characterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

## Test Completion Dates

Lab Sample No(s) Customer Sample Ref.	17431914	17431915	17431916	17431917	17431903	17431904	17431905	17431906	17431907	17431908
	VC02	VC02	VC02	VC02	VC03	VC03	VC03	VC03	VC04	VC04
AGS Ref.										
Depth	3.20 - 3.63	2.80 - 3.20	1.80 - 2.20	0.80 - 1.20	0.80 - 1.20	3.39 - 3.79	2.80 - 3.20	1.80 - 2.20	3.60 - 4.00	0.80 - 1.20
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	02-May-2018		30-Apr-2018	27-Apr-2018	30-Apr-2018	30-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	30-Apr-2018
Anions by ion Chromatography	03-May-2018		02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Anions by Kone (w)	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018
Asbestos ID in Solid Samples	30-Apr-2018	30-Apr-2018	02-May-2018	02-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	02-May-2018	30-Apr-2018
CEN 10:1 Leachate (1 Stage)	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	27-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
CEN Readings	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	28-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Cyanide Comp/Free/Total/Thiocyanate	30-Apr-2018		01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	30-Apr-2018	30-Apr-2018
Dissolved Metals by ICP-MS	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018
Dissolved Organic/Inorganic Carbon	01-May-2018	01-May-2018	01-May-2018	02-May-2018	01-May-2018	02-May-2018	02-May-2018	01-May-2018	01-May-2018	30-Apr-2018
EPH CWG (Aliphatic) GC (S)	01-May-2018		30-Apr-2018	30-Apr-2018	01-May-2018	30-Apr-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
EPH CWG (Aromatic) GC (S)	01-May-2018		30-Apr-2018	30-Apr-2018	01-May-2018	30-Apr-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Fluoride	04-May-2018	04-May-2018	03-May-2018	04-May-2018	03-May-2018	04-May-2018	04-May-2018	04-May-2018	04-May-2018	03-May-2018
GRO by GC-FID (S)	01-May-2018		01-May-2018	01-May-2018	02-May-2018	03-May-2018	01-May-2018	02-May-2018	02-May-2018	01-May-2018
Hexavalent Chromium (s)	30-Apr-2018		03-May-2018	30-Apr-2018	02-May-2018	30-Apr-2018	02-May-2018	03-May-2018	03-May-2018	02-May-2018
Loss on Ignition in soils	02-May-2018		03-May-2018	03-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	03-May-2018	02-May-2018
Mercury Dissolved	02-May-2018	02-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	02-May-2018	03-May-2018	03-May-2018
Metals in solid samples by OES	01-May-2018		30-Apr-2018	30-Apr-2018	02-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Mineral Oil	01-May-2018		30-Apr-2018	30-Apr-2018	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	30-Apr-2018	01-May-2018
OC, OP Pesticides and Triazine Herb	02-May-2018		02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Organotins on soils*	11-May-2018		11-May-2018	11-May-2018	11-May-2018	11-May-2018	22-May-2018	11-May-2018	11-May-2018	11-May-2018
PAH by GCMS	02-May-2018		01-May-2018	01-May-2018	02-May-2018	01-May-2018	02-May-2018	02-May-2018	01-May-2018	01-May-2018
Passing Through >63µm sieve	02-May-2018	02-May-2018	03-May-2018	04-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	03-May-2018	02-May-2018
PCBs by GCMS	03-May-2018		30-Apr-2018	30-Apr-2018	03-May-2018	03-May-2018	03-May-2018	02-May-2018	02-May-2018	02-May-2018
pH	27-Apr-2018		28-Apr-2018	28-Apr-2018	27-Apr-2018	28-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Phenols by HPLC (S)	29-Apr-2018		29-Apr-2018	29-Apr-2018	27-Apr-2018	29-Apr-2018	27-Apr-2018	29-Apr-2018	29-Apr-2018	27-Apr-2018
Phenols by HPLC (W)	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Polybrominated Diphenyl Ethers*	17-May-2018		17-May-2018	17-May-2018	17-May-2018	17-May-2018	17-May-2018	17-May-2018	17-May-2018	17-May-2018
Sample description	25-Apr-2018		24-Apr-2018	24-Apr-2018	25-Apr-2018	24-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018
Semi Volatile Organic Compounds	02-May-2018		02-May-2018	02-May-2018	27-Apr-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Solid Content	26-Apr-2018		25-Apr-2018	25-Apr-2018	27-Apr-2018	25-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
Total Dissolved Solids	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Total Organic Carbon	30-Apr-2018		27-Apr-2018	27-Apr-2018	30-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Total Sulphate	01-May-2018		30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
TPH CWG GC (S)	01-May-2018		01-May-2018	01-May-2018	02-May-2018	03-May-2018	01-May-2018	02-May-2018	02-May-2018	01-May-2018
VOC MS (S)	01-May-2018		01-May-2018	01-May-2018	03-May-2018	01-May-2018	01-May-2018	01-May-2018	02-May-2018	01-May-2018



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Lab Sample No(s)	17431909	17431910	17431895	17431896	17431898	17431899	17431900	17431882	17431883	17431901
Customer Sample Ref.	VC04	VC04	VC05	VC05	VC05	VC06	VC06	VC07	VC07	VC08
AGS Ref.										
Depth	1.80 - 2.20	2.80 - 3.20	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	1.60 - 2.00	0.80 - 1.20	1.00 - 1.45
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	02-May-2018	30-Apr-2018	30-Apr-2018	27-Apr-2018	03-May-2018	02-May-2018	30-Apr-2018	27-Apr-2018	30-Apr-2018	02-May-2018
Anions by ion Chromatography	02-May-2018	02-May-2018	03-May-2018	02-May-2018	04-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Anions by Kone (w)	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018
Asbestos ID in Solid Samples	02-May-2018	30-Apr-2018	01-May-2018	02-May-2018	30-Apr-2018	02-May-2018	02-May-2018	02-May-2018	30-Apr-2018	02-May-2018
CEN 10:1 Leachate (1 Stage)	26-Apr-2018	26-Apr-2018	27-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
CEN Readings	27-Apr-2018	30-Apr-2018	28-Apr-2018	30-Apr-2018	28-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Cyanide Comp/Free/Total/Thiocyanate	30-Apr-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Dissolved Metals by ICP-MS	03-May-2018	03-May-2018	03-May-2018	04-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	04-May-2018
Dissolved Organic/Inorganic Carbon	02-May-2018	02-May-2018	01-May-2018	01-May-2018	03-May-2018	02-May-2018	01-May-2018	01-May-2018	02-May-2018	02-May-2018
EPH CWG (Aliphatic) GC (S)	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018
EPH CWG (Aromatic) GC (S)	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018
Fluoride	03-May-2018	04-May-2018	04-May-2018	04-May-2018	03-May-2018	03-May-2018	04-May-2018	04-May-2018	03-May-2018	04-May-2018
GRO by GC-FID (S)	01-May-2018	02-May-2018	02-May-2018	02-May-2018	01-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Hexavalent Chromium (s)	03-May-2018	30-Apr-2018	03-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	02-May-2018	03-May-2018	30-Apr-2018
Loss on Ignition in soils	03-May-2018	02-May-2018	02-May-2018	03-May-2018	01-May-2018	04-May-2018	03-May-2018	03-May-2018	02-May-2018	03-May-2018
Mercury Dissolved	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	02-May-2018	02-May-2018
Metals in solid samples by OES	30-Apr-2018	30-Apr-2018	02-May-2018	30-Apr-2018	02-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Mineral Oil	30-Apr-2018	30-Apr-2018	01-May-2018	30-Apr-2018	03-May-2018	01-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
OC, OP Pesticides and Triazine Herb	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Organotins on soils*	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018
PAH by GCMS	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Passing Through >63µm sieve	03-May-2018	02-May-2018	02-May-2018	04-May-2018	02-May-2018	04-May-2018	04-May-2018	04-May-2018	02-May-2018	03-May-2018
PCBs by GCMS	02-May-2018	02-May-2018	03-May-2018	02-May-2018	03-May-2018	03-May-2018	02-May-2018	02-May-2018	03-May-2018	03-May-2018
pH	27-Apr-2018	28-Apr-2018	27-Apr-2018	27-Apr-2018	28-Apr-2018	28-Apr-2018	28-Apr-2018	28-Apr-2018	27-Apr-2018	28-Apr-2018
Phenols by HPLC (S)	01-May-2018	29-Apr-2018	29-Apr-2018	01-May-2018	29-Apr-2018	29-Apr-2018	01-May-2018	29-Apr-2018	30-Apr-2018	01-May-2018
Phenols by HPLC (W)	01-May-2018	01-May-2018	01-May-2018	01-May-2018	02-May-2018	01-May-2018	01-May-2018	02-May-2018	01-May-2018	01-May-2018
Polybrominated Diphenyl Ethers*	17-May-2018	17-May-2018	17-May-2018	17-May-2018	17-May-2018	22-May-2018	22-May-2018	22-May-2018	22-May-2018	22-May-2018
Sample description	25-Apr-2018	24-Apr-2018	25-Apr-2018	25-Apr-2018	24-Apr-2018	24-Apr-2018	24-Apr-2018	25-Apr-2018	25-Apr-2018	24-Apr-2018
Semi Volatile Organic Compounds	27-Apr-2018	03-May-2018	02-May-2018	02-May-2018	03-May-2018	02-May-2018	03-May-2018	27-Apr-2018	02-May-2018	02-May-2018
Solid Content	26-Apr-2018	25-Apr-2018	27-Apr-2018	26-Apr-2018	25-Apr-2018	26-Apr-2018	25-Apr-2018	26-Apr-2018	26-Apr-2018	25-Apr-2018
Total Dissolved Solids	01-May-2018	01-May-2018	01-May-2018	01-May-2018	02-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Total Organic Carbon	27-Apr-2018	27-Apr-2018	30-Apr-2018	27-Apr-2018	03-May-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Total Sulphate	30-Apr-2018	30-Apr-2018	01-May-2018	30-Apr-2018	03-May-2018	01-May-2018	30-Apr-2018	30-Apr-2018	01-May-2018	01-May-2018
TPH CWG GC (S)	01-May-2018	02-May-2018	02-May-2018	02-May-2018	01-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
VOC MS (S)	01-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	03-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018



# CERTIFICATE OF ANALYSIS

Validated

SDG: 180424-31  
Location: Lowestoft

Client Reference: 62240712  
Order Number: 62240712

Report Number: 457244  
Superseded Report:

Lab Sample No(s)

Customer Sample Ref.

AGS Ref.

Depth

Type

	17431902	17431886	17431887	17431889	17431890	17431891	17431892	17431911	17431912	17431913
	VC08	VC11	VC11	VC11	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
	0.60 - 1.00	1.80 - 2.20	0.80 - 1.20	2.20 - 2.50	1.80 - 2.20	0.80 - 1.20	2.45 - 2.85	1.80 - 2.20	2.80 - 3.30	0.80 - 1.20
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	02-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018		30-Apr-2018	27-Apr-2018	02-May-2018	30-Apr-2018	27-Apr-2018
Anions by ion Chromatography	02-May-2018	03-May-2018	03-May-2018	02-May-2018		03-May-2018	02-May-2018	02-May-2018	02-May-2018	04-May-2018
Anions by Kone (w)	05-May-2018	05-May-2018	05-May-2018	05-May-2018		05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018
Asbestos ID in Solid Samples	30-Apr-2018	01-May-2018	30-Apr-2018	30-Apr-2018		01-May-2018	30-Apr-2018	02-May-2018	30-Apr-2018	01-May-2018
CEN 10:1 Leachate (1 Stage)	26-Apr-2018	26-Apr-2018	27-Apr-2018	01-May-2018		27-Apr-2018	26-Apr-2018	01-May-2018	01-May-2018	26-Apr-2018
CEN Readings	30-Apr-2018	30-Apr-2018	30-Apr-2018	02-May-2018		28-Apr-2018	30-Apr-2018	02-May-2018	02-May-2018	27-Apr-2018
Cyanide Comp/Free/Total/Thiocyanate	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018		01-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	01-May-2018
Dissolved Metals by ICP-MS	03-May-2018	03-May-2018	03-May-2018	03-May-2018		03-May-2018	04-May-2018	03-May-2018	03-May-2018	03-May-2018
Dissolved Organic/Inorganic Carbon	30-Apr-2018	30-Apr-2018	03-May-2018	01-May-2018		02-May-2018	30-Apr-2018	02-May-2018	02-May-2018	01-May-2018
EPH CWG (Aliphatic) GC (S)	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018		01-May-2018	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018
EPH CWG (Aromatic) GC (S)	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018		01-May-2018	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018
Fluoride	04-May-2018	03-May-2018	03-May-2018	04-May-2018		04-May-2018	03-May-2018	04-May-2018	03-May-2018	04-May-2018
GRO by GC-FID (S)	03-May-2018	02-May-2018	03-May-2018	02-May-2018		02-May-2018	02-May-2018	01-May-2018	01-May-2018	01-May-2018
Hexavalent Chromium (s)	03-May-2018	02-May-2018	30-Apr-2018	30-Apr-2018		30-Apr-2018	30-Apr-2018	02-May-2018	02-May-2018	30-Apr-2018
Loss on Ignition in soils	02-May-2018	02-May-2018	02-May-2018	02-May-2018			02-May-2018	03-May-2018	02-May-2018	02-May-2018
Mercury Dissolved	03-May-2018	03-May-2018	03-May-2018	03-May-2018		03-May-2018	03-May-2018	02-May-2018	02-May-2018	03-May-2018
Metals in solid samples by OES	01-May-2018	30-Apr-2018	02-May-2018	30-Apr-2018		02-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Mineral Oil	01-May-2018	01-May-2018	01-May-2018	30-Apr-2018		01-May-2018	30-Apr-2018	01-May-2018	01-May-2018	01-May-2018
OC, OP Pesticides and Triazine Herb	02-May-2018	02-May-2018	02-May-2018	02-May-2018		02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Organotins on soils*	11-May-2018	11-May-2018	11-May-2018	11-May-2018		11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018
PAH by GCMS	02-May-2018	01-May-2018	01-May-2018	01-May-2018	03-May-2018	01-May-2018	02-May-2018	01-May-2018	01-May-2018	01-May-2018
Passing Through >63µm sieve	02-May-2018	02-May-2018	02-May-2018	02-May-2018			02-May-2018	04-May-2018	02-May-2018	02-May-2018
PCBs by GCMS	03-May-2018	03-May-2018	03-May-2018	03-May-2018		03-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
pH	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018		27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	28-Apr-2018
Phenols by HPLC (S)	27-Apr-2018	29-Apr-2018	29-Apr-2018	27-Apr-2018		29-Apr-2018	27-Apr-2018	01-May-2018	01-May-2018	29-Apr-2018
Phenols by HPLC (W)	01-May-2018	01-May-2018	01-May-2018	03-May-2018		01-May-2018	01-May-2018	03-May-2018	03-May-2018	01-May-2018
Polybrominated Diphenyl Ethers*	17-May-2018	17-May-2018	17-May-2018	17-May-2018			17-May-2018	22-May-2018	17-May-2018	17-May-2018
Sample description	25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018		25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018	24-Apr-2018
Semi Volatile Organic Compounds	02-May-2018	27-Apr-2018	02-May-2018	27-Apr-2018		02-May-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	03-May-2018
Solid Content	26-Apr-2018	26-Apr-2018	27-Apr-2018	26-Apr-2018		27-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
Total Dissolved Solids	01-May-2018	01-May-2018	01-May-2018	01-May-2018		01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Total Organic Carbon	30-Apr-2018	27-Apr-2018	30-Apr-2018	27-Apr-2018		30-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Total Sulphate	01-May-2018	01-May-2018	01-May-2018	01-May-2018		01-May-2018	01-May-2018	01-May-2018	30-Apr-2018	01-May-2018
TPH CWG GC (S)	03-May-2018	02-May-2018	03-May-2018	02-May-2018		02-May-2018	02-May-2018	01-May-2018	01-May-2018	01-May-2018
VOC MS (S)	02-May-2018	01-May-2018	03-May-2018	01-May-2018		03-May-2018	01-May-2018	01-May-2018	01-May-2018	02-May-2018



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 180424-31  
**Location:** Lowestoft

**Client Reference:** 62240712  
**Order Number:** 62240712

**Report Number:** 457244  
**Superseded Report:**

Lab Sample No(s) Customer Sample Ref.	17431884	17431885	17431893	17431894
	VC01B	VC01B	VC09B	VC09B
AGS Ref.				
Depth	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	02-May-2018	30-Apr-2018	27-Apr-2018	27-Apr-2018
Anions by ion Chromatography	02-May-2018	02-May-2018	03-May-2018	02-May-2018
Anions by Kone (w)	05-May-2018	05-May-2018	05-May-2018	05-May-2018
Asbestos ID in Solid Samples	02-May-2018	02-May-2018	30-Apr-2018	30-Apr-2018
CEN 10:1 Leachate (1 Stage)	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
CEN Readings	30-Apr-2018	30-Apr-2018	28-Apr-2018	30-Apr-2018
Cyanide Comp/Free/Total/Thiocyanate	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Dissolved Metals by ICP-MS	03-May-2018	04-May-2018	03-May-2018	04-May-2018
Dissolved Organic/Inorganic Carbon	01-May-2018	01-May-2018	02-May-2018	02-May-2018
EPH CWG (Aliphatic) GC (S)	01-May-2018	30-Apr-2018	01-May-2018	01-May-2018
EPH CWG (Aromatic) GC (S)	01-May-2018	30-Apr-2018	01-May-2018	01-May-2018
Fluoride	03-May-2018	03-May-2018	03-May-2018	04-May-2018
GRO by GC-FID (S)	02-May-2018	02-May-2018	02-May-2018	03-May-2018
Hexavalent Chromium (s)	30-Apr-2018	03-May-2018	30-Apr-2018	30-Apr-2018
Loss on Ignition in soils	03-May-2018	03-May-2018	02-May-2018	02-May-2018
Mercury Dissolved	03-May-2018	03-May-2018	03-May-2018	03-May-2018
Metals in solid samples by OES	01-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Mineral Oil	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018
OC, OP Pesticides and Triazine Herb	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Organotins on soils*	11-May-2018	11-May-2018	11-May-2018	11-May-2018
PAH by GCMS	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Passing Through >63µm sieve	03-May-2018	04-May-2018	02-May-2018	02-May-2018
PCBs by GCMS	03-May-2018	03-May-2018	02-May-2018	30-Apr-2018
pH	27-Apr-2018	27-Apr-2018	28-Apr-2018	28-Apr-2018
Phenols by HPLC (S)	27-Apr-2018	02-May-2018	29-Apr-2018	01-May-2018
Phenols by HPLC (W)	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Polybrominated Diphenyl Ethers*	17-May-2018	17-May-2018	17-May-2018	17-May-2018
Sample description	25-Apr-2018	25-Apr-2018	24-Apr-2018	24-Apr-2018
Semi Volatile Organic Compounds	27-Apr-2018	02-May-2018	02-May-2018	02-May-2018
Solid Content	26-Apr-2018	26-Apr-2018	25-Apr-2018	25-Apr-2018
Total Dissolved Solids	01-May-2018	01-May-2018	02-May-2018	01-May-2018
Total Organic Carbon	30-Apr-2018	01-May-2018	27-Apr-2018	27-Apr-2018
Total Sulphate	01-May-2018	01-May-2018	01-May-2018	01-May-2018
TPH CWG GC (S)	02-May-2018	02-May-2018	02-May-2018	03-May-2018
VOC MS (S)	02-May-2018	01-May-2018	02-May-2018	01-May-2018





# CERTIFICATE OF ANALYSIS

<b>SDG:</b> 180424-31	<b>Client Reference:</b> 62240712	<b>Report Number:</b> 457244
<b>Location:</b> Lowestoft	<b>Order Number:</b> 62240712	<b>Superseded Report:</b>

## Appendix

## General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH<sub>4</sub> by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

## Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

## Asbestos

### Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

### Visual Estimation Of Fibre Content

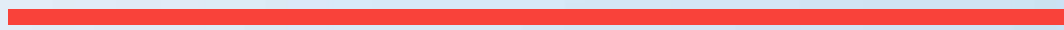
Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

**Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.**

**The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.**

# Annex E

HUMAN HEALTH RISK ASSESSMENT



BACKGROUND INFORMATION

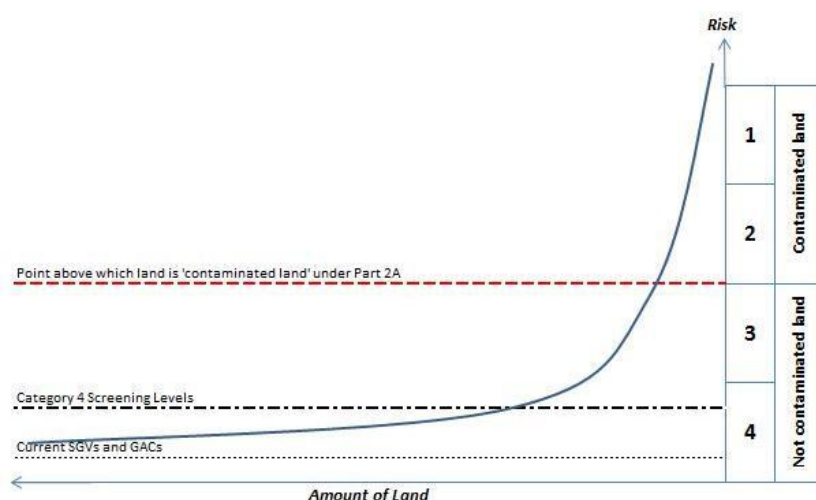
# METHODOLOGY FOR THE DERIVATION OF GENERIC QUANTITATIVE ASSESSMENT CRITERIA TO EVALUATE RISKS TO HUMAN HEALTH FROM SOIL & GROUNDWATER CONTAMINATION

## UK APPROACH

In the UK, the potential risks to human health from contamination in the ground are usually evaluated through a generic quantitative risk assessment (GQRA) approach. This allows generic and conservative exposure assumptions to be readily applied to risk assessments and can be a useful tool for rapidly screening data and to identify those contaminants or scenarios that could benefit from further investigation and/or site-specific detailed quantitative risk assessment (DQRA). Current industry good practice is to use the approach presented in the Environment Agency (EA) publications SR2<sup>1</sup> and SR3<sup>2</sup>. This approach allows the derivation of Generic Assessment Criteria (GACs), primarily for chronic exposure.

In April 2012, the Department of Environment, Food and Rural Affairs (Defra) published updated statutory guidance<sup>3</sup> which introduced a four category approach to determining whether land in England and Wales is contaminated or not on the grounds of significant possibility of significant harm (SPOSH). **Figure 1** presents a graphical representation of the categories.

**Figure 1: Four Categories for Determining if Land Represent a SPOSH**



Cases classified as Category 1 are considered to be SPOSH based on actual evidence or an unacceptably high probability of harm existing. Category 4 cases are those where there is no risk, or a low risk of SPOSH.

<sup>1</sup> Environment Agency 'Human Health Toxicological Assessment of Contaminants in Soil', Report SC050021/SR2. January 2009.

<sup>2</sup> Environment Agency 'Updated Technical Background to the CLEA Model,' Report SC050021/SR3. January 2009.

<sup>3</sup> Defra 'Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance'. April 2012.

GACs represent a minimal risk level, well within Category 4. A 2014 publication by Contaminated Land: Applications in Real Environments (CL:AIRE), SP1010<sup>4</sup> and endorsed by Defra<sup>5</sup> provided an approach to determine Category 4 Screening Levels (C4SLs) which are higher than the GACs whilst being “more pragmatic but still strongly precautionary”. It also provided C4SLs for six contaminants of concern. Although the C4SLs were designed to support Part 2A assessments to determine ‘contaminated land’ they are specifically mentioned, along with reference to the Part 2A statutory guidance, by the Department for Communities and Local Government (DCLG) for use in a planning context<sup>6</sup>.

An updated version the Contaminated Land Exposure Assessment (CLEA) Workbook (v1.071) was released by the EA in September 2015 to take into account the publication of SP1010. The updates comprised: additional toxicity data for the six chemicals for which C4SLs were derived; two new public open space land use scenarios; updated exposure parameters; options to run the model using C4SL exposure assumptions; and increased functionality. There were no changes to algorithms, so it is still possible to replicate the withdrawn SGVs using the input parameters held within v1.071.

It should be noted that the four category approach has not been adopted in Scotland under Part 2A or the planning regime. The Part 2A statutory guidance applicable in Scotland (Paper SE/2006/44 dated May 2006) does not reflect the changes introduced by Defra in April 2012 which allow for the use of C4SLs within Part 2A risk assessments. Additionally, it is considered that the principal of ‘minimal risk’ should still apply under planning in Scotland, based on current guidance.

## WSP APPROACH

Following the withdrawal of the SGVs, and in the absence of an industry-wide, accepted set of GACs it is down to individual practitioners to derive their own soil assessment criteria. WSP has used the approach provided within SR2, SR3, SP1010, CLEA Workbook v1.071 and SR4<sup>7</sup> to produce a set of minimal risk GACs. The chemical-specific data within two key publications were considered during their production: CL:AIRE 2010<sup>8</sup> and LQM 2015<sup>9</sup>. Both documents provide comprehensive sets of GACs for different contaminants of concern.

The LQM Suitable For Use Levels (S4ULs) have selected exposure parameters somewhere between those of the SR3 land uses and the C4SL exposure scenarios. This approach was rejected by WSP as not representing minimal risk, however, the LQM S4UL document was critically reviewed and the approach and chemical input parameters were utilised where considered to be appropriate.

An industry-led C4SL Working Group is in the process of deriving a larger set of C4SLs in the near future, for approximately 20 contaminants. This will include a critical review of the chemical input data for all selected substances, and may therefore lead to further amendments to the chemical input data used in the WSP in-house screening values. It is considered likely that the contaminant list will

---

<sup>4</sup> CL:AIRE ‘Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination’ SP1010, Final Project Report (Revision 2). September 2014.

<sup>5</sup> Defra ‘SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document’. December 2014.

<sup>6</sup> DCLG Planning Practice Guidance ‘Land Affected by Contamination’, particularly Paragraphs 001 and 007. Ref IDs: 33-001-20140306 & 33-007-20140612.

<sup>7</sup> Environment Agency ‘CLEA Software (Version 1.05) Handbook (and Software)’, Report SC050021/SR4. September 2009.

<sup>8</sup> CL:AIRE ‘The EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment’. ISBN 978-1-05046-20-1. January 2010.

<sup>9</sup> Nathanail et al ‘The LQM/CIEH S4ULs for Human Health Risk Assessment’, Land Quality Press, ISBN 978-0-9931084-0-2. 2015.

crossover with the current CL:AIRE GACs. As such, this document was not critically reviewed by WSP.

WSP's current approach to the assessment of risks to human health is to continue to evaluate minimal risk through the use of in-house derived GACs, and to use the published C4SLs as a secondary tier of assessment until such time as additional C4SLs are published and/or in-house values are derived.

## EXPOSURE MODELS

### LAND USES

WSP has largely adopted the exposure assumptions of the generic land use scenarios included within SR3, with two additional public open space scenarios included from within SP1010:

- à Residential with homegrown produce consumption;
- à Residential without homegrown produce consumption;
- à Allotments;
- à Commercial;
- à Public open space near residential housing (POS<sub>resi</sub>); and
- à Public park (POS<sub>park</sub>).

Exceptions are described in the following Sections.

### SOIL PROPERTIES

SR3 assumes a sandy loam soil with a pH of 7 and a Soil Organic Matter (SOM) content of 6% for its generic land uses, based on the geographical spread of topsoils in the UK. WSP has adopted these default values. In addition, GACs based on an SOM of 1% and 2.5% have been derived, based on common experience of the nature of Made Ground and lack of topsoil on many brownfield sites.

### RECEPTOR CHARACTERISTICS AND BEHAVIOURS

SP1010 provides some updated exposure parameters for long-term inhalation rates<sup>10</sup> and the consumption rates for homegrown produce<sup>11</sup> compared to those provided in SR3. This data was used to derive WSP's GACs.

The changes in inhalation rates do not apply to the allotment generic land use scenario, as these are based on the breathing rates for short-term exposure of light to moderate intensity activity which were derived from a study that was not updated in USEPA 2011, so the SR3 rates were retained.

---

<sup>10</sup> USEPA, National Centre for Environmental Assessment 'Exposure Factors Handbook: 2011 Edition' EPA/600/R-09/052F. September 2011.

<sup>11</sup> National Diet and Nutrition Survey 2008/2009 to 2010/2011.

## CHEMICAL DATA

### PHYSICO-CHEMICAL PARAMETERS

Physico-chemical properties for the contaminants for which GACs have been derived have been obtained following critical review of the following hierarchy of data sources:

1. Environment Agency/Defra SGV reports where available.
2. Environment Agency 'Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values', Report SC050021/SR7, November 2008.
3. Published fate and transport reviews within Nathanail et. al 2015 and CL:AIRE 2010.

Where appropriate, and where sufficient data is available, values were adjusted to reflect a UK soil temperature of 10°C (e.g.  $K_{aw}$ ).

### TOXICOLOGICAL DATA

Toxicological data for the derivation of minimal risk Health Criteria Values (HCV) for each contaminant was selected with due regard to the approach presented in SR2. Where appropriate, the following hierarchy of data sources was used:

1. UK toxicity reviews published by authoritative bodies including:
  - < EA;
  - < Public Health England (PHE);
  - < Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT); and
  - < Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC).
2. Authoritative European sources such as European Food Standards Agency (EFSA)
3. International organisations including:
  - < World Health Organisation (WHO); and
  - < Joint FAO/WHO Expert Committee on Food Additives (JECFA).
4. Authoritative country-specific sources including:
  - < United States Environmental Protection Agency (USEPA);
  - < US Agency for Toxic Substances and Disease Registry (ATSDR);
  - < US Integrated Risk Information System (IRIS); and
  - < Netherlands National Institute for Public Health and the Environment (RIVM).

Factors such as the applicability of the data to human health (e.g. epidemiological vs. animal studies), the quality of the data, the level of uncertainty in the results and the age of the data were also taken into account in the final selection. Details for specific substances are available on request.

## MEAN DAILY INTAKES

Estimations of background exposure for each threshold substance have been updated. In line with the SR2 approach, the exposure from non-threshold substances in the soil does not take into account exposure from other sources, and as such GACs were derived without consideration of the Mean Daily Intake (MDI) for those substances.

The data published by the EA in its series of TOX reports between 2002 and 2009 was evaluated to determine whether the values were considered to remain valid today. Values from these current UK published sources were not amended unless they were considered to be significantly different so that the GACs remained as comparable as possible with the revoked SGVs.

## ORAL MEAN DAILY INTAKES

Oral MDI were generally estimated as the sum of exposure via the ingestion of food and drinking water using the default adult physiological parameters presented in Table 3.3 of SR2.

Data on the exposure of substances from food ingestion was generally obtained from UK Total Diet Studies (TDS) published by the Food Standards Agency (FSA) and its predecessor the Ministry of Agriculture, Fisheries and Food (MAFF) and from studies commissioned by COT. Where no UK-specific data was available, MDI were derived from the European Food Safety Authority (EFSA), Health Canada and US sources. This was a rare occurrence, and in these instances, the data was evaluated to determine its applicability to the UK.

Data on the concentrations of substances in tap water was obtained from a variety of sources. UK data was used where available, with preference given to Drinking Water Inspectorate (DWI) 2014 data from water company tap water testing (LOD, 1<sup>st</sup> and 99<sup>th</sup> percentile data is available). Where the substance was not included in tap water testing, other UK sources of information were considered including:

- à DWI data from water company tap water testing from previous years;
- à COT; and
- à FSA.

Where UK data was not available, a number of other data sources were considered, largely WHO International Programme on Chemical Safety (IPCS) Concise International Chemical Assessment Documents (CICADs) and background documents for the development of Guidelines for Drinking Water Quality, using professional judgement on the relevance of the data to the UK. The final decision on the MDI from drinking water was made using professional judgement on the balance of relevance and probability, taking into account the detection limit where not detected, Koc and solubility, reduction in use of the substance, banned substances, tight controls (e.g. on explosives) and with due consideration to the SR2 instruction that “if no data or information in background exposure are available, background exposure should be assumed to be negligible and the MDI set to zero....”.

Data from other countries was generally not used because it was considered that the hydrogeology of these countries along with industrial practices were unlikely to be reflective of the UK.

## INHALATION MEAN DAILY INTAKES

Inhalation MDIs were based on estimates of average daily exposure by the inhalation pathway and calculated using the default adult physiological parameters presented in Table 3.3 of SR2.

The inhalation MDIs were generally estimated using background exposure data from the UK, derived from Defra's UK-AIR: Air Information Resource<sup>12</sup>, which provides ambient air quality data from a number of sites forming a UK-wide monitoring network. The MDIs for heavy metals were based on rolling annual average metal mass concentration data from Defra's UK Heavy Metals Monitoring Network from the period October 2009 to September 2010<sup>13</sup>.

Information for some substances was obtained from UK sources including Environment Agency TOX reports and data from the UK Expert Panel on Air Quality Standards (EPAQS). Where recent UK data was not available, data was sourced from the International Programme on Chemical Safety (IPCS), the World Health Organisation (WHO), the Agency for Toxic Substances and Diseases Registry (ATSDR), Health Canada, and various other peer-reviewed sources summarised by LQM/CIEH<sup>14</sup>.

For other substances, where no data or information on background exposure was available, background exposure was assumed to be negligible and the MDI set at 0.5\*TDI in accordance with guidance in SR2.

## PLANT UPTAKE

Soil to plant concentration factors are available in CLEA v1.071 for arsenic, cadmium, hexavalent chromium, lead, mercury, nickel and selenium. For all remaining inorganic chemicals, concentration factors were obtained using the PRISM model. Substance-specific correction factors have been selected in accordance with the guidance established within SR3. This is consistent to the approach utilised in the derivation of the LQM S4UL values and the EIC/AGS/CL:AIRE GAC.

Where there is a lack of appropriate data to enable the derivation of specific soil to plant concentrations factors for organic chemicals, plant uptake was modelled within CLEA v1.071 using the generic equations recommended within SR3, as follows:

- à Green Vegetables – Ryan et al. (1988);
- à Root Vegetables – Trapp (2002);
- à Tuber Vegetables – Trapp et al. (2007); and
- à Tree Fruit – Trapp et al. (2003).

There are no suitable models available for modelling uptake for herbaceous fruit or shrub fruit. Exposure is considered negligible.

---

<sup>12</sup> Crown 2016 copyright Defra via uk-air.defra.gov.uk, licenced under the Open Government Licence (OGL).

<sup>13</sup> Defra, 2013 Spreadsheet of historic data for multiple years for the Metals network. Available online at: <http://uk-air.defra.gov.uk/data/metals-data>. [Accessed 13/03/2016].

<sup>14</sup> LQM/CIEH, 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment.



## SOIL SATURATION LIMITS

GACs are not limited to their theoretical soil saturation within CLEA, although where either the aqueous or the vapour-based saturation is exceeded, this is highlighted within the Workbook (compared with the lower of the two values). This affects pathways which depend on partitioning calculations so in reality this only affects the vapour pathways and is relevant to organic substances and other substances, such as elemental mercury, that have a significant volatile component. However, the Workbook highlights saturation for direct contact pathways to indicate to the user where further qualitative consideration of free phase contamination at surface may be required.

Where the lower of the two saturation limits is exceeded and the vapour pathway is the only exposure route being considered, the chronic risks to human health are likely to be negligible. Further evaluation could be undertaken using an alternative model suitable for evaluating non-aqueous phase liquids (NAPLs), such as the Johnson & Ettinger (J&E) approach described in USEPA 2003. However, WSP considers that if NAPLs are suspected, given the known limitations and over-simplifications of J&E, soil vapour monitoring is a more accurate way of assessing potential risks.

Where the lower saturation limit is exceeded for the vapour pathway and a number of exposure routes are being considered, then the contribution from the NAPL via vapour inhalation to the overall exposure can be evaluated using the procedure provided in SR4. WSP would evaluate this as part of a DQRA process or through soil vapour monitoring on-site to determine site-specific soil vapour concentrations.

## CHEMICAL SPECIFIC ASSUMPTIONS

### CYANIDES

Cyanide has high acute toxicity, and short term exposure is an important consideration when assessing the risks from soils contaminated with cyanide. The primary risk to human receptors from free cyanide in soils is an acute risk.

There is no current UK guidance available for calculating acute risks from free cyanide. Consequently, GAC for acute exposure were derived using the algorithms presented in MADEP 1992<sup>15</sup> and assuming a one-off ingestion of 10g of soil (this conservative value has been taken as an upper bound estimate for a one-off soil ingestion rate amongst children). Receptor body weights have been selected according to the critical receptor for each exposure scenario. The lowest of the chronic and acute GAC for each land use scenario were adopted by WSP. Brinckerhoff.

### LEAD

The SGV for lead was withdrawn by the EA in 2009, and in 2011 the EA withdrew their published TOX report in light of new scientific evidence. The C4SL for lead was derived using the latest scientific evidence from a large human dataset. As such, no chemical-specific margin was applied in the derivation of the C4SL for lead. It may be possible for WSP to derive a GAC for lead using the same dataset and applying a chemical-specific margin, but the value is likely to be lower than UK natural background concentrations. Therefore, WSP has adopted the toxicological data used to derive the C4SLs in deriving the GAC for lead until such time as alternative GACs are published by an authoritative body. The relative bioavailability was set at 100% in line with the approach taken for other GACs, whereas the C4SL assumes 60% for soil and 64% for airborne dust. Thus, the WSP GAC are lower than the C4SLs.

---

<sup>15</sup> MADEP 'Background Documentation for the Development of an "Available Cyanide" Benchmark Concentration' 1992. [http://www.mass.gov/dep/toxics/cn\\_soil.htm](http://www.mass.gov/dep/toxics/cn_soil.htm)

## POLYCYCLIC AROMATIC HYDROCARBONS

WSP's approach to the assessment of polycyclic aromatic hydrocarbons (PAHs) uses the surrogate marker approach. BaP was used as a surrogate marker for all genotoxic PAHs in line with the Health Protection Agency 2010<sup>16</sup> recommendations and SP1010. This assumes that the PAH profile of the data is similar to that of the coal tars used in the Culp *et al* oral carcinogenicity study from which the toxicity data for BaP was produced. In reality, this profile has been shown by HPA to be applicable on the majority of contaminated sites based on assessment of sites across the country.

The alternative is the Toxic Equivalency Factor (TEF) approach which uses a reference compound and assigns TEFs for other compounds based on estimates of potency. Key uncertainties with this approach include the assumption that all compounds have the same toxic mechanism of action within the body and that no compounds with a greater potency than the reference compound are present. It is considered by the HPA that the TEF approach is likely to under predict the true carcinogenicity of PAHs and therefore favours the surrogate marker approach.

For these reasons, WSP considers that the adoption of BaP as a surrogate marker for genotoxic PAHs as opposed to the TEF approach is reasonable, even in cases where the PAH profile may differ from that of the Culp *et al* study. In addition, WSP has derived a GAC for naphthalene, which is commonly a risk driver due to its high volatility, relative to other PAH compounds, as an indicator compound for threshold PAHs.

## TRIMETHYLBENZENES

The GAC for trimethylbenzenes can be used for the assessment of any individual isomer (1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene or 1,3,5-trimethylbenzene), or a mixture of the three isomers.

## CHEMICAL GROUPS

For a number of chemical groups, the available toxicity data is for combinations of chemicals. Given that the physico-chemical parameters may differ between the chemicals, the GACs for the chemicals within the groups have been calculated and then the lowest GAC selected to represent the entire group. This was the approach taken by the EA for m-, o- and p-xylenes, and has also been adopted by WSP for:

- à 2-chlorophenol, 2,4-dichlorophenol, 2,4,6-trichlorophenol and 2,3,4,6-tetrachlorophenol;
- à 2-, 3- and 4-methylphenol (total cresols);
- à aldrin and dieldrin; and
- à  $\alpha$ - and  $\beta$ -endosulphan.

---

<sup>16</sup> HPA Contaminated Land Information Sheet 'Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs) 2010

## EXPOSURE TO VAPOURS

### INHALATION OF MEASURED VAPOURS

WSP has derived a set of soil vapour GACs ( $GAC_{sv}$ ) that allow for the assessment of measured site soil vapour concentrations, using J&E, in order to establish potential risks via indoor inhalation of vapours. This methodology enables a more robust assessment of exposure via the inhalation of soil vapours indoors than using CLEA-derived soil GAC, as it is based upon measured soil vapour concentrations beneath the site. It also allows for the assessment of vapours from all source terms (i.e. groundwater, soil or NAPL). Outdoor inhalation was not included. WSP considers that the indoor inhalation pathway is the significantly dominant risk-driver.

The generic land use scenarios within CLEA (residential and commercial) that were used to derive the soil GAC were used to define the receptor and building characteristics for the soil vapour GAC. Only residential and commercial generic land use scenarios include the indoor inhalation of vapours pathway.

The  $GAC_{sv}$  were derived for three different soil types; sand, sandy loam and clay, reflecting the importance of this parameter within the J&E model. A depth to contamination of 0.85 m below the base of the building foundation was assumed (i.e. 1 m below ground level). This differs from the depth assumed for the soil GAC (0.5 m bgl), but was selected by WSP as a reasonable worst case scenario.

It is acknowledged that the J&E commonly over-predicts indoor vapour concentrations. In particular, it will significantly over-predict vapour concentrations for suspended floor slabs, which many new builds are constructed with, it does not take into account lateral migration and assumes an infinite source of contamination at steady state conditions. In addition, it is common for soil gas/vapour wells to be installed with at least 1 m of plain riser at the surface and this equates to a total depth of 0.85 m below the building foundation plus a 0.15 m thick foundation, and so is more representative of the depth that samples will be taken from.

The TDSIs and IDs for each substance were converted from  $\mu\text{gkg}^{-1}\text{bwday}^{-1}$  to  $\mu\text{gm}^{-3}$  using the standard conversions quoted in Table 3.3 of SR2, thereby replacing the need to model  $C_{air}$  in the equation:

$$C_{air} = \alpha \cdot C_{vap} \cdot 1,000,000 \text{cm}^3 \text{m}^{-3}$$

Where:

$C_{air}$  is the concentration of vapours within the building,  $\text{mg}^{-3}$

$\alpha$  is the steady state attenuation coefficient between soil and indoor air, dimensionless

$C_{vap}$  is the soil vapour concentration,  $\text{mgcm}^{-3}$

The target concentrations within indoor air for each substance ( $C_{air}$ ) are a function of receptor inhalation rates and occupancy periods, as defined by the site conceptual exposure model (assuming standard CLEA occupancy periods and receptors).

The attenuation factor was calculated using J&E (Equation 10.4 in SR3) and the resulting  $C_{vap}$  is equivalent to the  $GAC_{sv}$  for the modelled exposure scenario.

Where the calculated  $GAC_{sv}$  for a substance exceeds the vapour saturation limit, no  $GAC_{sv}$  has been proposed.

## INHALATION OF GROUNDWATER-DERIVED VAPOURS

The CLEA model does not have the capacity to derive GACs to assess vapours derived from dissolved phase contamination. WSP has derived a set of groundwater GACs ( $GAC_{gw}$ ) to evaluate the potential risks through the indoor inhalation of groundwater-derived vapours by first applying the approach described above for the derivation of the WSP  $GAC_{sv}$  to determine the acceptable concentration in soil vapour directly above the water table.

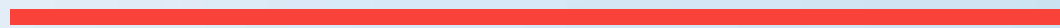
The depth to groundwater was assumed to be 1 m bgl (i.e. 0.85 m below the base of the building foundation). This depth was considered to be more representative of commonly encountered groundwater conditions than the 0.5 m below the base of the building foundation (i.e. 0.65 m bgl) that is used by CLEA for an unsaturated source present in the overlying soil.

The  $GAC_{gw}$  was then back-calculated from the  $GAC_{sv}$  using the air-water partition coefficient ( $K_{aw}$ ) for each substance.

Where the calculated  $GAC_{gw}$  for a substance exceeds the solubility limit, no  $GAC_{gw}$  has been proposed.

# Annex F

CHEMICAL SCREENING





















Lake Lothing  
Surface Water Samples  
EQS Screening

	17424916	17424917	17424918	17424919		
SDG ID.	180423-34	180423-34	180423-34	180423-34		
Project Site	Lowestoft	Lowestoft	Lowestoft	Lowestoft		
Sample Description	WS01	WS02	WS03	WS04		
Sample Depth	0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20		
Date Sampled	19/04/2018	19/04/2018	19/04/2018	19/04/2018		
Received On	23/04/2018	23/04/2018	23/04/2018	23/04/2018		
Date Complete	30/04/2018	30/04/2018	30/04/2018	30/04/2018		
<b>EQS Coastal Screen</b>						
<b>Carbon</b>						
Organic Carbon, Total	mg/l	.	<3	<3	<3	<3
<b>Inorganics</b>						
Alkalinity, Total as CaCO3	mg/l	.	135	124	122	122
Ammoniacal Nitrogen as N	mg/l	.	<0.2	<0.2	<0.2	<0.2
Apparent Colour	mg/l Pt/Co	.	27.3	13.7	9.61	11.3
Chloride	mg/l	.	18400	18500	18000	18300
Conductivity @ 20 deg.C	mS/cm	.	45.8	46.7	46.3	45.1
Nitrate as NO3	mg/l	.	<0.3	<0.3	<0.3	<0.3
pH	pH Units	.	7.9	7.92	7.93	7.9
Phosphate (Ortho as PO4)	mg/l	.	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/l	.	2640	2620	2610	2600
Suspended solids, Total	mg/l	.	42.3	36.8	40.8	34.2
True Colour	mg/l Pt/Co	.	1.38	1.95	1.49	1.51
<b>Filtered (Dissolved) Metals</b>						
Aluminium (diss.filt)	µg/l	.	<60	<60	<60	<60
Arsenic (diss.filt)	µg/l	25	<3	<3	<3	<3
Cadmium (diss.filt)	µg/l	0.2	<0.48	<0.48	<0.48	<0.48
Chromium (diss.filt)	µg/l	0.6	<6	<6	<6	<6
Copper (diss.filt)	µg/l	3.76	3.32	1.84	<1.8	<1.8
Iron (Dis.Filt)	mg/l	1	<0.114	<0.114	<0.114	<0.114
Lead (diss.filt)	µg/l	1.3	<1.2	<1.2	<1.2	<1.2
Manganese (diss.filt)	µg/l	.	<18	18.5	22.3	18.9
Mercury (diss.filt)	µg/l	0.07	<0.01	<0.01	<0.01	<0.01
Nickel (diss.filt)	µg/l	8.6	3.13	<2.4	<2.4	3.32
Zinc (diss.filt)	µg/l	6.8	26.8	19.9	21.2	8.88
<b>Unfiltered (Total) Metals</b>						
Calcium (Tot. Unfilt.)	mg/l	.	440	450	415	461
Magnesium (Tot. Unfilt.)	mg/l	.	1130	1160	1150	1130
Potassium (Tot. Unfilt.)	mg/l	.	361	356	355	349
Sodium (Tot. Unfilt.)	mg/l	.	8440	8940	9050	8890
<b>Gasoline Range Organics (GRO)</b>						
EPH (C6-C10)	µg/l	.	<100	<100	<100	<100
GRO >C5-C10	µg/l	.	<10	<10	<10	<10
<b>EPH (Extractable Petroleum Hydrocarbons)</b>						
EPH Range >C10 - C40 (aq)	µg/l	.	<100	<100	<100	<100
<b>TPH Criteria Working Group (TPH CWG)</b>						
Benzene	µg/l	8	<7	<7	<7	<7
Ethylbenzene	µg/l	20	<5	<5	<5	<5
m,p-Xylene	µg/l	30	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	.	<3	<3	<3	<3
o-Xylene	µg/l	30	<3	<3	<3	<3
Sum of detected BTEX	µg/l	.	<28	<28	<28	<28
Toluene	µg/l	74	<4	<4	<4	<4
Total EPH (C6-C40) (aq)	µg/l	.	<100	<100	<100	<100

Lake Lothing  
Sediment Grab Sample Screening

Sample	Location				Contaminant	Arsenic	Cadmium	Chromium	Copper	Mercury	Nickel	Lead	Zinc	Organotins: (TBT, DBT, MBT)	PCB's, ICES 7	PCB's, 25 congeners	Boron	Selenium	Total Metal Load Vs AL 1
	E	N	Lat	Long		Action Level 1	Action Level 2												
					Action Level 1	20	0.4	40	40	0.3	20	50	130	0.1	0.01	0.02	N/A	N/A	100
					Action Level 2	100	5	400	400	3	200	500	800	1	0.139	0.2	N/A	N/A	
G01	652497.9	292762.6	52°28'27.59"N	001°42'59.65"E		19.1	0.392	26.2	131	<0.14	24.7	65.8	212	<LOD	<LOD	<LOD	40.3	<LOD	162.4519259
G02	653038.5	293033.9	52°28'35.48"N	001°43'28.96"E		18.4	<0.02	25.8	63.4	<0.14	23.6	47.8	161	<LOD	<LOD	<LOD	34.6	<LOD	118.4944605
G03	653285.85	292941.3	52°28'32.06"N	001°43'41.77"E		19.8	0.297	27.2	35	<0.14	25.8	37.4	124	<LOD	<LOD	<LOD	41.8	<LOD	91.4097875
G04	653542.93	292882.1	52°28'29.73"N	001°43'55.25"E		19.8	0.313	24.3	23.6	<0.14	24.1	33.2	100	<LOD	<LOD	<LOD	38.4	<LOD	74.58948174
G05	653619.93	292806	52°28'27.14"N	001°43'59.11"E		21.2	<0.02	23.4	21.3	<0.14	24	32.6	101	<LOD	<LOD	<LOD	41.8	<LOD	74.58039978
G06	653760.79	292834.2	52°28'27.81"N	001°44'06.65"E		24.2	0.255	27.3	21.3	<0.14	27.8	36.5	108	<LOD	<LOD	<LOD	44.8	<LOD	80.55085736
G07	654026.34	292762.7	52°28'25.08"N	001°44'20.47"E		18.6	0.311	24.7	21.7	<0.14	25.3	37.2	108	<LOD	<LOD	<LOD	27.2	<LOD	79.63215949
G08	654060.18	292676.3	52°28'22.21"N	001°44'22.03"E		20.6	0.258	25.4	18.6	<0.14	25.4	31.4	94	<LOD	<LOD	<LOD	45	<LOD	70.38430444
G09	654245.01	292706.7	52°28'22.90"N	001°44'31.90"E		18.7	0.236	20.3	13.9	<0.14	20.7	25.1	72.5	<LOD	<LOD	<LOD	44.5	<LOD	54.85451822
G10	654843.57	292696.6	52°28'21.54"N	001°45'03.49"E		17.5	0.294	14.8	12.7	<0.14	16.5	21.4	60.4	<LOD	<LOD	<LOD	32	<LOD	45.73505668
G11	655114.78	292628.4	52°28'18.89"N	001°45'17.69"E		19.5	<0.02	21.4	14.8	<0.14	22.3	29.9	85.1	<LOD	<LOD	<LOD	41.7	<LOD	63.42667279
G12	655186.48	292816.4	52°28'24.84"N	001°45'21.96"E		19.6	0.286	22.5	20.7	<0.14	23.7	32.3	93.9	<LOD	<LOD	<LOD	38.8	<LOD	70.15358554

Lake Lothing  
Marine Sediment Vibrocore Sample Screen

Sample	Depth	Location				Contaminant	Arsenic	Cadmium	Chromium	Copper	Mercury	Nickel	Lead	Zinc	Organotins; (TBT, DBT, MBT)	PCB's, ICES 7	PCB's, 25 congeners	Boron	Selenium	Total Metal Load Vs AL1
		E	N	Lat	Long		Action Level 1	Action Level 2												
						Action Level 1	20	0.4	40	40	0.3	20	50	130	0.1	0.01	0.02	N/A	N/A	100
						Action Level 2	100	5	400	400	3	200	500	800	1	0.139	0.2	N/A	N/A	
VC2	1						4.22	0.098	3.31	4.19	0.14	4.38	7.83	16	<LOD	<LOD	<LOD	40.3	<LOD	12.57927244
VC2	2						3.84	0.063	2.58	3.22	0.14	3.47	2.65	11.6	<LOD	<LOD	<LOD	34.6	<LOD	8.627117403
VC2	3						37.9	0.553	24.9	29.3	0.14	35.9	31.1	104	<LOD	<LOD	<LOD	41.8	<LOD	79.99599662
VC2	3.5						15.3	1.18	0.9	12.1	0.14	21.5	13.5	61.7	<LOD	<LOD	<LOD	38.4	<LOD	42.53165671
VC3	1						19.7	0.241	22	25.6	0.14	23.4	31.7	95.8	<LOD	<LOD	<LOD	41.8	<LOD	71.8160635
VC3	2						3.42	0.086	5.45	2.9	0.14	3.3	4.27	18.7	<LOD	<LOD	<LOD	44.8	<LOD	13.30317582
VC3	3						22.4	1.01	0.9	8.11	0.14	18.3	10.9	47.5	<LOD	<LOD	<LOD	27.2	<LOD	33.73829767
VC3	3.5						1.75	0.038	2.91	2.9	0.14	2.78	4.52	9.05	<LOD	<LOD	<LOD	45	<LOD	7.374096943
VC4	1						3.4	0.139	12	10.8	0.14	12.9	10.2	31.6	<LOD	<LOD	<LOD	44.5	<LOD	25.02579075
VC4	2						1.35	0.036	2.89	2.29	0.14	3	3.54	8.25	<LOD	<LOD	<LOD	32	<LOD	6.597179432
VC4	3						2.74	0.053	4.51	5.46	0.14	6.32	9.64	15	<LOD	<LOD	<LOD	41.7	<LOD	12.87192709
VC4	3.8						0.936	0.02	1.1	1.4	0.14	1.1	3.31	4.24	<LOD	<LOD	<LOD	38.8	<LOD	3.66436256
VC5	1						21	0.241	24.7	23.3	0.14	25.8	36.3	105	<LOD	<LOD	<LOD			78.29462677
VC5	2						3.65	0.088	1.73	5.48	0.14	2.83	6.85	15.6	<LOD	<LOD	<LOD			11.91686909
VC5	2.7						11.4	0.342	0.9	7.98	0.14	6.13	8.54	48.1	<LOD	<LOD	<LOD			31.56367475
VC6	1						34.8	0.282	23	20.1	0.14	24.5	38.3	98.6	<LOD	<LOD	<LOD			75.39729191
VC6	2.2						2.21	0.13	1.65	2.14	0.14	3.04	2.49	8.13	<LOD	<LOD	<LOD			6.145635196
VC7	1						0.6	0.03	1.11	3.43	0.14	0.59	2.72	4.07	<LOD	<LOD	<LOD			3.720276493
VC7	1.8						0.832	0.067	1.69	1.4	0.14	1.1	5.36	4.78	<LOD	<LOD	<LOD			4.494434034
VC8	0.8						1.19	0.2	2.11	1.69	0.14	1.45	3.3	6.29	<LOD	<LOD	<LOD			5.07525347
VC8	1.2						0.6	0.025	1.23	1.4	0.14	1.35	1.95	3.87	<LOD	<LOD	<LOD			3.183093685
VC9	1						36.1	1.98	0.9	3.79	0.14	14.7	11.3	47.2	<LOD	<LOD	<LOD			33.78354505
VC9	1.4						0.703	0.032	1.65	1.4	0.14	1.16	2.34	6.75	<LOD	<LOD	<LOD			4.930779799
VC10	1						19	0.243	24.4	23	0.14	24.8	34.1	101	<LOD	<LOD	<LOD			75.24338073
VC10	2						1.67	0.052	1.68	1.45	0.14	2.37	2.97	8.26	<LOD	<LOD	<LOD			6.104048461
VC10	2.7						1.09	0.045	1.1	1.95	0.14	1.38	4.31	10.1	<LOD	<LOD	<LOD			7.26470871
VC11	1						19.9	0.277	25.2	27	0.14	25.7	38.8	117	<LOD	<LOD	<LOD			86.11084411
VC11	2						1.21	0.025	1.6	1.4	0.14	1.36	2.48	5.66	<LOD	<LOD	<LOD			4.407012746
VC11	2.4						1.54	0.03	1.76	2.69	0.14	1.75	4.25	7.5	<LOD	<LOD	<LOD			6.116832085
VC12	1						18.3	0.373	24.1	26.2	0.14	23	43.7	125	<LOD	<LOD	<LOD			90.91010224
VC12	2						1.08	0.051	1.62	1.99	0.14	1.88	2.5	5.35	<LOD	<LOD	<LOD			4.376715633
VC12	3						4.54	0.116	14	10.4	0.14	15.3	11.9	48.6	<LOD	<LOD	<LOD			35.40940118





1st Floor Station House  
Tithebarn Street, Exchange Station  
Liverpool  
L2 2QP

[wsp.com](http://wsp.com)