

# **Environment Group**

Peveril Securities Ltd Lakeview Drive Bicester, Oxfordshire

Phase 2 Geo-Environmental Assessment

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# Phase 2 Geo-Environmental Assessment

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September 2017

BIM Document Ref: LDB-BWB-00-XX-EN-RP-0001\_PH2\_P1

Project Number: NTE2366



### **DOCUMENT ISSUE RECORD**

Rev	Date of Issue	Status	Author:	Checked:	Geotech Approved:	Land Approved:
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EXECUTIVE SUMMAR	Y
Site Address	Land off Lakeview Drive, Bicester, Oxfordshire, OX261DE
Proposed	The proposed development is anticipated to comprise the development of up
Development	to 55,000m <sup>2</sup> of office space.
Site Setting and History	The site is irregular in shape and occupies approximately 21.0ha of land. The site currently comprises three large open fields used for grass / hay making and a landscaped area to the north including a large pond. Two dry drainage ditches cut north to south across the site.
	The site has remained relatively undeveloped since the earliest mapping produced in 1881. The site has been shown to comprise agricultural land with several small buildings located in the western extents of the site, believed to be associated with farming activities.
	The surrounding land has been utilised for agricultural uses, with a sewage works and railway line located immediately south and east of the site since 1880.
scope of investigation works	boreholes to a maximum depth of 4.4m below ground level (bgl) and 26 machine excavated trial pits to a maximum depth of 3.7mbgl.
Ground Conditions Encountered	Ground conditions were found to comprise varying thicknesses of topsoil overlying weathered deposits of the Cornbrash Formation to the west of site, with central and eastern areas recording thin deposits of Alluvium and River Terrace Deposits overlying the weathered Kellaways Clay Member underlain by the Cornbrash Formation.
	A small amount of Made Ground was recorded in the north western area of the site.
Geotechnical Appraisal	Shallow spread foundations within the Cornbrash Formation or Kellaways Clay Member should be suitable for the proposed buildings along the western boundary of the site (buildings 1 & 11). For the proposed buildings in the central and eastern area of site ground improvement techniques comprising vibrostone columns maybe required.
	A ground bearing floor slab should be achievable for the proposed development, however the floor slab should avoid spanning different geological strata to avoid differential settlement issues.
	Design sulphate class DS-2 and ACEC Class AC-2 is required for concrete to resist attack from sulphate levels across the site.
Environmental Assessment	The environmental risk assessment has identified limited sources of contamination that represent a risk to human health. A hotspot of Total TPH and loose Asbestos fibres have been recorded with the shallow Made Ground deposits encountered.
	Elevated concentrations of sulphate have been identified within the groundwater beneath the site which could represent a risk to concrete foundations. Impact to secondary A Aquifers and surface water features is likely to be restricted based upon the predominately hardstanding cover of the proposed development.
	Ground gas monitoring has indicated that the site can be characterised as a CS1 site whereby ground gas protection measures are not required.
Recommendations	To mitigate the risk posed to human health from asbestos fibres, a clean soil cover system will be required in landscaped areas positioned above the existing



#### **EXECUTIVE SUMMARY**

Made Ground deposits. The movement of Made Ground should be tracked if excavated as part of the development scheme to ensure appropriate mitigation is required. This may be by use of a Material Management Plan.

The foundation solutions for the proposed development should be re-assessed once final loadings are known.

This summary should be read in conjunction with BWB's full report (ref. LDB-BWB-00-XX-EN-RP-0001\_PH2\_P1) and reflects an assessment of the site based on information received by BWB at the time of production.



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- Appendix 12 Soil Leachate Assessment Sheets
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# **1** INTRODUCTION

### Instruction

- 1.1 BWB Consulting (BWB) was instructed by Peveril Securities Ltd (the Client) to carry out a Phase 2 Geo-Environmental Assessment for the site at Lakeview Drive, Bicester, Oxfordshire. Details of the project brief are included in BWB proposal reference 170623/01/NTE2366/RPD/LC, dated June 2017
- 1.2 The proposed development is anticipated to comprise the development of up to 55,000m<sup>2</sup> of office space. Details on the design of the proposed development have not been provided to date, however BWB anticipate that development will be no taller than 3 stories and include areas of car parking and limited soft landscaping.
- 1.3 A proposed development plan (drawing reference 16SK109, undated) and assumed current at the time of writing this report is presented as **Appendix 1**.

# **Objectives**

- 1.4 The objectives of the report are to assess:
  - The prevailing ground and groundwater conditions across the site;
  - The potential presence and extent of contamination in shallow soil and groundwater beneath the site;
  - The significance and magnitude of the observed contamination through comparison of analytical data to appropriate published environmental screening criteria;
  - The strength properties of the soil beneath the site to enable foundation design; and
  - The ground gas regime beneath the site.
- 1.5 The above objectives will allow the preliminary Conceptual Site Model presented in the Phase 1 report to be verified and updated. The report has been completed in accordance with BS10175:2011(+A1:2013) 'Investigation of Potentially Contaminated Sites, Code of Practice' and CLR11 'Model Procedures for the Management of Land Contamination'.
- 1.6 This report presents the information obtained from a desk study and the supplementary ground investigations. Sections 2 to 5 of the report, together with the associated Figures and Appendices, provides a Ground Investigation Report (GIR), as defined in BS EN 1997-1:2004 and BS EN 1997-2:2007
- 1.7 The report also includes information required to form a Geotechnical Design Report as defined in BS EN 1997-1:2004, and the salient information, assessments and recommendations are presented in Sections 6 to 11 of the report, together with the associated Figures and Appendices.



# Scope of Works

- 1.8 The ground investigation scope of works was completed on Thursday13<sup>th</sup> September 2017 and comprised the following;
  - Non-intrusive survey of excavation locations for underground utilities;
  - 26 machine excavated trial pits;
  - 12 cable percussive boreholes;
  - Insitu TRL DCP testing at select location;
  - Four gas and groundwater monitoring visits;
  - Chemical analysis of soils and groundwater; and
  - Geotechnical testing of soil.



# 2 THE SITE

# Site Location

2.1 The site is located at Lakeview Drive Bicester, Oxfordshire, centred at National Grid reference 457953, 221555. The approximate location of the site is shown in **Figure 1**.



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# Site Description

2.2 The layout of the site with the main features is presented as **Drawing 1**. A detailed description of the key features of the site and its surroundings is included in the Phase 1 Report (ref: LDB-BWB-00-XX-RP-EN-0001\_PH1, dated August 2017).



# **3 GEO-ENVIRONMENTAL SETTING**

# **Published Geology**

- 3.1 British Geological Survey (BGS) mapping for the site indicates that the site is directly underlain by Alluvium overlying River Terrace Deposits (RTD) to the east, south and western areas of the site, no superficial deposits are mapped across the centre and northern areas. The solid geology beneath the site comprises the Kellaways Clay Member underlain by the Cornbrash Formation, with the Kellaways Clay Member absent in the west.
- 3.2 No Made Ground is mapped across the site, however limited Made Ground deposits are anticipated to the north west area as a result of historical developments and recent construction works across the neighbouring plots (Tesco Superstore). The Groundsure Report indicates Made Ground is present along the northern boundary (A41 roadway) and eastern boundary (railway line).
- 3.3 Varying thicknesses of Topsoil are anticipated across the site.
- 3.4 Several historical BGS borehole records are located within the site boundary. Borehole log SP25SE81 is located along the eastern boundary and details topsoil to 0.25m below ground level (bgl), Alluvium deposits to 3.7m bgl, dense clayey sand to 6.2m bgl, Kellaways Clay member to 9.3m bgl overlying the Cornbrash Formation (limestone).
- 3.5 Additional borehole records (refs: SP25SE78 & SP25SE82) also located along the eastern boundary generally confirm the ground conditions detailed above, with the Cornbrash Formation encountered between 8.05m and 10.6m bgl respectively.

# Hydrogeology

- 3.6 The underlying ground conditions have been classified by the Environment Agency (EA) as follows:
  - River Terrace Deposits: Secondary A Aquifer; and
  - Cornbrash Formation: Secondary A Aquifer.

# Hydrology

- 3.7 Two drainage ditches are present on site cutting east to west. One is located to the north of the site with the second located to the south. Both are listed as unnamed tertiary rivers and were noted to be dry during the site walkover undertaken as part of the Phase 1 Assessment.
- 3.8 The southern and eastern areas of the site lie within an EA designated Zone 2 and 3 floodplain.



# 4 PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

### Introduction

- 4.1 The risk posed by any contaminants in soil or groundwater will depend on the nature of the hazard, the probability of exposure, the pathway by which exposure occurs, and the likely effects on the receptors. A contaminant is defined as a substance that has the potential to cause harm, while a risk is considered to exist if such a substance is present in sufficient concentration to cause harm and a pathway exists for a receptor to be exposed to the substance.
- 4.2 The following sections discuss all the identified potential on and off site sources, pathways and receptors in the context of the proposed development and plausible pollutant linkages which may represent a risk to identified receptors such as human health and/or controlled waters from the data gained from the desk study. At this stage the assessment is qualitative and aimed to determine all pollutant linkages, irrespective of significance or allowing for uncertainty.
- 4.3 Three impact potentials exist for any given site, these are:
  - The site impacting upon itself;
  - The site impacting on its surroundings; and
  - The surroundings impacting on the site.
- 4.4 All three impacts need to be considered in a risk assessment.
- 4.5 A Source, Pathway, Receptor analysis has been undertaken for the site based on the information provided in the preceding sections. This is presented as **Table 1**.
- 4.6 **Sources (S)**; These are potential or known sources of contamination that may relate to a former land use or present site feature or process (e.g. fuel storage tanks).
- 4.7 **Pathways (P)**; A pathway is defined as a mechanism or route by which a contaminant comes into contact with, or otherwise affects a receptor. Pathways by which the identified receptors may be impacted upon in the context of the proposed development.
- 4.8 **Receptors (R);** Receptors are defined as people, living organisms, ecological systems, controlled waters, atmosphere, structures and utilities that could be adversely affected by contaminant(s).



able 1 Preliminary Conceptual Site Model								
Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation		
	P1: Direct contact	<b>R1</b> : Construction personnel	Md	Lw	M/L	A ground investigation is recommended in order to assess current concentrations of organic and inorganic contaminants within soils and		
<b>\$1</b> : On site: Ground	and incidental ingestion.	<b>R2</b> : Future site users (commercial)	Md UI	UI	L	groundwater at the site that are likely to impo construction workers and future site users of ingestion, direct contact, and inhalation pathwa		
conditions and historical site uses, most notably						If present, it is likely that these contaminant linkages will be easily severed through		
agricultural uses, infilled ponds, out buildings (unknown uses) & construction yard	<ul> <li>P2: Vertical migration of contaminants in the soil leachate.</li> <li>P3: Migration and accumulation of ground gasses in enclosed spaces.</li> </ul>	<b>R3:</b> Underlying Secondary A Aquifer (RTD)	Md	Lw	M/L	remediation/mitigation measures such as the provision of a hardstanding surface layer, capping layers in areas of soft landscaping and ground gas/vapour protection measures.		
(temporary). Possible contaminants to include – agrochemicals, fuel oils, heavy metals and hazardous ground gases.		<b>R4:</b> Underlying Secondary A Aquifer (Cornbrash Formation)	Md	UI	L	The risk to the Aquifer present within the Cornbrash Formation is likely to be reduced due to the relatively impermeable cohesive Kellaways Clay Member present above.		
		<b>R1</b> : Construction personnel	Sv	Iw	м	Ground gas assessment in line with guidance detailed in CIRIA 665 and BS8485:2015 should be		
		<b>R2</b> : Future site users (commercial)				undertaken to calculate the gassing regime beneath the site.		
<b>S2:</b> Offsite – Land uses including the STW, petrol filling station and infilled ground.	<b>P4</b> : Leaching and permeation through the soil profile and migration	R3:UnderlyingSecondaryAAquifer (RTD)R4:UnderlyingSecondaryA	Md	UI	L	Ground investigation with consideration of the ground gas regime will aid in the assessment of potential contamination to risks to human health and controlled water receptors.		



Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation		
Contaminants to potentially include hydrocarbons, heavy motals increanics		Aquifer (Cornbrash Formation)				Low permeability of the surrounding geology may have reduced leaching of contaminated groundwater onto site.		
asbestos, organic compounds, micro- organisms and hazardous	<b>P5:</b> Lateral migration of contaminated groundwater	<b>R5:</b> Unnamed Primary River	Md	UI	L			
ground gases.	P3: Migration and accumulation of ground gasses in enclosed spaces.	<b>R2</b> : Future site users (commercial)	Sv	UI	M/L			
VH = Very High, <mark>H = High</mark> , M = Moderate, M/L = Moderate/Low, <mark>L = Low</mark> , VL = Very Low								
KEY: Sv = Sev ere, Md = Medium, Mi = Mild, Mr = Minor Hi = High, Li = Likely, Lw = Low Likelihood, UI = Unlikely								



# 5 PHASE II ENVIRONMENTAL AND GEOTECHNICAL GROUND INVESTIGATION

## Scope of Works

- 5.1 Intrusive ground investigation works were undertaken between 14<sup>th</sup> August and 13<sup>th</sup> of September 2017 and comprised the following works:
  - Clearance of investigation locations by a specialist buried services tracing company;
  - Collection of coordinates and elevations of exploratory hole locations;
  - The advancement of 12 cable percussive boreholes (BH101 to BH110, BH112 & BH113) to a maximum depth of 4.4mbgl with completion of SPTs and installations of gas and groundwater monitoring wells;
  - The advancement of 26 machine excavated trial pits (TP101 to TP126 inclusive) to a maximum depth of 3.7mbgl;
  - TRL dynamic probe penetration (TRL DCP) testing at selected locations in order to infer CBR values;
  - Collection of environmental soil and groundwater water samples for chemical analysis at a UKAS and MCERTS accredited laboratory;
  - Collection of bulk and disturbed soil samples for geotechnical analysis at a UKAS accredited laboratory; and
  - Four post investigation ground gas and groundwater level monitoring visits.
- 5.2 An exploratory hole location plan is presented as **Drawing 2**. BWB exploratory hole records are presented as **Appendix 2**, Drillers' Logs are presented as **Appendix 3**, the SPT calibration certificate is presented in **Appendix 4**, the post investigation gas and groundwater monitoring data is presented as **Appendix 5** and the TRL DCP results are presented as **Appendix 6**.
- 5.3 The site investigation works were carried out in general accordance with BS5930:2015 'Code of Practice for Site Investigations' and BS10175:2011 'Investigation of Potentially Contaminated Sites'.

# Sampling Strategy

- 5.4 A review of the Phase 1 Desk Study Report revealed limited potential contamination sources across the site. Therefore, the intrusive locations were positioned to provide site wide coverage.
- 5.1 Each borehole location was installed with a 50mm HDPE well screen, bung and gas tap to facilitate ground gas and groundwater monitoring. **Table 2** below summarises the response zone in each borehole and their targeted geology.



Location	Slotted Well S	creen (m bgl)	Taracted Goolean		
LOCUIION	Тор	Base	Tulgeleu Geology		
BH101	1.0	2.55	Cornbrash Formation		
BH102	1.0	3.4	Cornbrash Formation		
BH103	1.0	4.0	River Terrace / Kellaways Clay Member		
BH104	0.5	2.0	Alluvium		
BH105	0.5	1.4	Cornbrash Formation		
BH106	1.0	2.5	Kellaways Clay Member		
BH107	1.0	3.4	Alluvium/Kellaways Clay Member		
BH108	1.0	3.0	Alluvium		
BH109	1.0	3.3	Alluvium		
BH110	1.0	3.5	Alluvium/Kellaways Clay Member		
BH112	1.0	3.0	Alluvium/Kellaways Clay Member		
BH113	1.0	4.0	Alluvium/Kellaways Clay Member		

### Table 2 Borehole Installation Summary

## Chemical Analytical Strategy

### Soil Strategy

- 5.2 Selected soil samples collected from exploratory hole locations were sent to 12 Analytical Services (UKAS and MCERTS accredited) for chemical analysis. The following chemical analytical testing was undertaken:
  - 16 soil samples tested for a soil suite (BWB Standard Suite) comprising arsenic, barium, beryllium, water soluble boron, cadmium, chromium, hexavalent chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc, water soluble sulphate (2:1 extract), total phenols, total cyanide, free cyanide, complex cyanide, fraction of organic carbon, pH, Polycyclic Aromatic Hydrocarbons (PAHs) (United States Environment Protection Agency priority 16 compounds) and Total Petroleum Hydrocarbons (TPH) C6-C40;
  - Two soil samples tested for TPH speciated to the UK Criteria Working Group (TPHCWG) aliphatic and aromatic compounds;
  - Three Soil samples for Organochloride and Organiohos pesticides;
  - Five soil samples for asbestos screening; and
  - Three soil samples tested for a suite of common leachable contaminants, namely arsenic, barium, beryllium, water soluble boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc, sulphate, total cyanide and pH.
- 5.3 The results of the soil chemical testing are presented as **Appendix 7**.

### Groundwater Strategy

- 5.4 Groundwater samples were obtained using a bailer following the removal of 3 times the well volume of water or the well bailed dry and allowed to recharge. The groundwater samples were sent to 12 Analytical Services (UKAS and MCERTS accredited) for the following suite of groundwater chemical testing:
  - Ten water samples tested for arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc, conductivity, soluble



sulphate, ammoniacal nitrogen, total phenols, total cyanide, pH, total organic carbon, PAHs (US EPA priority 16 compounds).

5.5 The results of the water chemical testing are presented as **Appendix 8**.

# Geotechnical Strategy

- 5.6 The cable percussive borehole locations were positioned beneath the proposed building footprint to assess underlying ground conditions for geotechnical purposes. The trial pits were positioned to assess ground conditions, strength properties and characteristics across the wider site.
- 5.7 In-situ soil strength testing comprising SPTs were undertaken within the cable percussive boreholes. SPT 'N' values are included on the exploratory hole logs presented as **Appendix 2**. Dynamic Cone Penetration tests (DCP) were undertaken at selected locations across the site.
- 5.8 Selected disturbed and bulk samples were collected from the investigation locations and sent to the geotechnical project laboratory (I2 Analytical Services), which is UKAS accredited. The following geotechnical testing was undertaken;
  - 13 samples tested for moisture content;
  - Nine samples tested for Atterberg (liquid and plastic) limits;
  - Six samples tested for particle size distribution (by wet Sieve);
  - Two point load tests: and
  - Six samples tested for BRE Suite comprising aqueous sulphate and pH.
- 5.9 The results of the geotechnical testing are included as **Appendix 9**.



# **6 GROUND CONDITIONS ENCOUNTERED**

# **Geological Summary**

- 6.1 The ground conditions recorded confirmed the published geology discussed within the Phase 1 report. In general the ground conditions were found to comprise varying thicknesses of topsoil overly weathered deposits of the Cornbrash formation to the west of site, with central and eastern areas recording thin deposits of Alluvium and River Terrace Deposits overlying the weathered Kellaways Clay Member underlain by the Cornbrash Formation.
- 6.2 A small amount of Made Ground was recorded in the north western area of the site.
- 6.3 A summary of the encountered ground conditions is presented below in **Table 3**. BWB exploratory hole records are presented as **Appendix 2**.

Table 5 Sommary of Grooma Containons									
Stratum	Top Depth (m)		Base Depth (m)		Thickness (m)		SPT N <sub>60</sub> Value		
	Min	Max	Min	Max	Min	Max	Min	Max	
Topsoil	Groui	nd lev el	0.2	0.6	0.2	0.6	-	-	
Made Ground	0.0	0.3	0.2	1.0	0.2	1.0	-	-	
Alluvium	0.2	0.8	0.5	2.8	0.2	2.55	6	15	
RiverTerrace Deposits	0.3	1.5	0.75	2.35	0.2	1.55	40	-	
Kellaways Clay Member	0.4	2.8	2.1	4.3	0.4	3.2	9	59 (refusal)	
Cornbrash Formation	0.2	4.3	1.44	4.4	Not P	rov en	55 (refusal)	59 (refusal)	

Table 3Summary of Ground Conditions

# **Geological Descriptions**

<u>Topsoil</u>

- 6.4 Topsoil was encountered at all locations with the exceptions on BH101, BH102, TP101, TP102, TP103 and TP124, where Made Ground was recorded from ground level. Topsoil was encountered at thicknesses of between 0.2m and 0.6m, the composition generally displayed consistency, typically comprising brown or greyish brown slightly clayey slightly gravelly sand with rootlets.
- 6.5 The depth of topsoil over the site may vary from that encountered at the locations investigated within the scope of this investigation which may result in inaccurate estimations of topsoil quantities on the site.

### Made Ground

6.6 As mentioned above, Made Ground deposits were recorded at BH101, BH102, TP101, TP102, TP103 and TP124, all located in the north western area of site. The Made Ground deposits were recorded with a thickness ranging between 0.2m and 1.0m and were typically recorded as;



- Firm brown, dark brown, yellow or grey sandy gravelly clay;
- Brown gravelly sand;
- Brown occasionally yellow sandy gravelly cobbles; and
- Firm brown mottled grey clayey gravelly sand (reworked natural ground).
- 6.7 No in-situ testing or geotechnical testing was undertaken within the Made Ground deposits due to the limited thicknesses and limited coverage of the deposits.

#### <u>Alluvium</u>

- 6.8 Alluvium deposits were recorded in 29 locations, commonly across the central and eastern areas of the site and was generally recorded as the following;
  - Firm brown or grey mottled yellow or orange slightly sandy gravelly clay;
  - Brown mottled grey clayey gravel;
  - Soft brown to dark brown clayey pseudo-fibrous peat; and
  - Orange gravelly sand.
- 6.9 Alluvium deposits were often recorded to include organic matter and relic rootlets.
- 6.10 Typically the thicker Alluvium deposits were recorded in the eastern area of site with a maximum thickness of 2.55m. This area is a flood relief area for the neighbouring sewage treatment works and is currently not designated for development.
- 6.11 SPT N<sub>60</sub> results undertaken within the cohesive Alluvium deposits ranged between 5 (recorded at various locations at 5.0m bgl) and 15 blows (BH104 at 1.0m & BH110 at 2.0m bgl), indicating soft to firm deposits. No SPTs were undertaken within the granular Alluvium arising's. Graphs presenting the SPT results are presented within the text of this report later in this section as **Figure 2**.
- 6.12 Seven samples of the Alluvium were sent for moisture content analysis, recording results of between 19% and 35%, the samples were also tested for plasticity recording a plasticity index ranging between 28 (low plasticity) and 52 (high plasticity). Plasticity classification charts are included within **Appendix 9**.
- 6.13 Three PSD tests were undertaken on samples from the Alluvium deposits, a summary of the results is provided in **Table 4** below.



Table 4	PSD R	esults Summa	iry			
Location	Depth (m bgl)	Cobble Content (%)	Gravel Content (%)	Sand Content (%)	Clay/ Silt Content (%)	Earthworks Classification
BH106	1.0	0.0	39.6	28.8	30.6	2C
BH109	1.0	0.0	0.0	2.9	97.1	2A/B
BH112	1.0	0.0	9.5	36.7	53.8	2A/B

### <u>River Terrace Deposits</u>

- 6.14 River Terrace Deposits were recorded in 12 locations across the site, typically recorded between the Alluvium and bedrock formation. The deposits were generally recorded as the following;
  - Dense yellow and grey or light brown and yellowish brown slightly sandy gravel;
  - Grey sandy gravel; and
  - Orange, brownish orange or light brown sand and gravel.
- 6.15 One SPT was undertaken within the River Terrace Deposits, recoding an N<sub>60</sub> value of 40 blows (BH103 at 1.2mbgl), indicating dense deposits.
- 6.16 One sample of the River Terrace Deposits was tested for PSD, recording a silt /clay content of 26.7%, sand content of 7.32% and gravel content of 0.1%. Based upon these results the material is considered likely to be classified as a 2A/B material based upon Series 600 Earthworks specification.

#### Kellaways Clay Formation

- 6.17 The Kellaways Clay Member was recorded in 28 locations across the site and was encountered to a maximum depth of 4.3m bgl, although in ten locations the thickness of the deposits was not proven. This stratum was typically encountered as:
  - Dark grey sandy gravelly clay;
  - Stiff dark grey clay;
  - Very dense dark grey clayey gravel; and
  - Dark grey weathered mudstone arising as a very clayey gravel.
- 6.18 N<sub>60</sub> SPT results obtained within the cohesive Kellaways Clay Member recorded results of between 9 (BH112 at 2.0m bgl) and 48 blows (BH110 at 3.0m bgl), indicating soft to very stiff deposits. All N<sub>60</sub> results within the granular deposits of the Kellaways Clay Member recorded a blow count of 55 and 59 blows (refusal) at various depths, indicating very dense deposits.
- 6.19 Two samples of the cohesive Kellaways arisings were sent for moisture content analysis, recording results of between 41% and 82%, the samples were also tested for plasticity recording a plasticity index ranging between 30 (low plasticity) and 41 (medium plasticity).
- 6.20 One sample of the granular Kellaways Clay Member arisings was tested for PSD, recording a silt /clay content of 36.8%, sand content of 22.0% and gravel content of 41.1%. Based upon these results the material is considered likely to be classified as a 2C material based upon Series 600 Earthworks specification.



#### Cornbrash Formation

- 6.21 The Cornbrash Formation was recorded in 29 locations across the site and was encountered to a maximum depth of 4.0m bgl, although the maximum thickness of the deposits was not proven in any location. This stratum was typically encountered as:
  - Dark grey, brown, brownish orange or yellowish grey slightly sandy gravel with low to high cobble content;
  - Stiff dark grey weather limestone arisings as slightly sandy gravel with low to moderate cobble content; and
  - Extremely strong dark grey limestone (no arising returned to surface).
- 6.22 The arising of the Cornbrash Formation was often recorded to contain fine shell fragments.
- 6.23 SPT N<sub>60</sub> results were recorded between 55 and 59 blows (refusal) at all locations encountered at various depths, indicating very dense / strong deposits.
- 6.24 One sample of the Cornbrash Formation was tested for PSD, recording a silt /clay content of 18.3%, sand content of 25.0%, a gravel content of 51.5% and a cobble content of 5.3%. Based upon these results the material is considered likely to be classified as a 2C material based upon Series 600 Earthworks specification.
- 6.25 Four point load tests were undertaken on bulk samples retrieved from the Cornbrash Formation at two locations. The results are summarised below in **Table 5**.

Location	Depth (mbgl)	Sample Type	Test Type	Is(50) MPa	Calculated Unconfined Compressive Stregth	Inferred Rock Strength
TP121	3.2 - 3.35	В	Irregular	0.41	9.02	Weak
TP121	3.2 – 3.55	В	Irregular	0.28	5.5	Weak
TP122	3.55 – 3.7	В	Irregular	0.51	11.22	Weak
Tp122	3.55 – 3.7	В	Irregular	0.21	4.62	Very weak

Table 5DCP TRL Results Summary

### In Situ Testing

### Dynamic Cone Penetrometer Testing

6.26 Dynamic Cone Penetrometer Tests were undertaken adjacent to a number of exploratory hole locations following the removal of the topsoil in order to infer California Bearing Ratio (CBR) values to inform pavement design. The testing was undertaken in accordance with Transport Research Laboratory (TRL) methodology. The results of the testing are presented as **Appendix 6** and are summarised in **Table 6** below.



Table 6	DCP TRL Results Summary		
Location	Stratum	Min CBR (%)	Max CBR (%)
TP101	Made Ground	9.8	29.1
TP103	Made Ground	28.0	>100*
TP104	Cornbrash Formation	4.2	>100
TP105	Alluvium	3.1	44.7
TP107	Alluvium	5.8	21.8
TP108	Alluvium	3.1	39.8
TP111	Alluvium	4.2	29.6
TP112	Alluvium	2.6	7.5
TP119	Alluvium	2.6	3.3
TP120	River Terrace Deposits	7.1	7.3
TP121	Alluvium	4.0	-
TP122	Alluvium	4.2	-
TP124	Made Ground	27.7	57.5
TP126	Made Ground (Reworked Natural)	3.0	3.2

\*Probe likely encountered a cobble during the test, the result should be discounted from any future design.

### Standard Penetration Tests

6.27 SPT results collected from the borehole locations are presented on the exploratory hole records presented in **Appendix 1**. A plot of corrected SPT 'N' Value vs. Depth is presented as **Figure 2** overleaf.



Figure 2 Corrected SPT N Value vs. Depth



# Hydrogeology

6.28 Groundwater strikes encountered during the ground investigation are summarised in **Table7** below.

Table 7	Water Stri	kes	
Location	Depth (m bgl)	Strata	Comments
BH102	2.5	Cornbrash Formation	Rising to 1.0m after 20minutes
BH106	2.5	Kellaways Clay Member	Rising to 1.8m after 20minutes
BH113	1.2	Alluvium	Rising to 1.0m after 20minutes
TP101	1.3	Cornbrash Formation	Seepagenoted
TP102	1.7	Cornbrash Formation	-
TP103	1.7	Cornbrash Formation	Steadyingress
TP104	1.6	Cornbrash Formation	Slowingress
TP105	1.25	Cornbrash Formation	Seepagenoted
TP106	1.1	River Terrace Deposits	Steadyingress
TP107	1.1	River Terrace Deposits	Steadyingress
TP108	2.5	Cornbrash Formation	Seepagenoted
TP110	2.15	Kellaways Clay Member	Slowingress
TP111	1.2	River Terrace Deposits	Steadyingress
TP112	1.15	River Terrace Deposits	Slowingress
TP113	1.1	Alluvium	Seepagenoted
TP113	1.5	River Terrace Deposits	Steadyingress
TP114	1.35	River Terrace Deposits	-
TP115	3.0	Cornbrash Formation	Seepagenoted
TP117	2.5	Cornbrash Formation	-
TP118	2.95	Cornbrash Formation	Rising to 2.85m after 20 minutes
TP120	3.0	Cornbrash Formation	Seepagenoted
TP121	3.3	Cornbrash Formation	Slowingress noted
TP124	1.1	Cornbrash Formation	Seepagenoted

- 6.29 Standing water levels were recorded within the installed boreholes on four occasions between 24<sup>th</sup> August and 13<sup>th</sup> September 2017. Groundwater was recorded between 0.72m bgl (64.1 AOD) at location BH105 installed into the Cornbrash Formation and 3.48m bgl (62.41m AOD) at location BH09 installed into the Alluvium deposits. Locations BH108 and BH109 was recorded as 'dry' during the first two monitoring visits.
- 6.30 On the basis of the groundwater strikes and the geological formations, it is likely that a continuous body of groundwater is present at shallow depth beneath the Site. Given the identified geology, groundwater is not limited to a single formation.
- 6.31 Groundwater monitoring data is presented as Appendix 5.

# Hydrology

6.32 No surface water monitoring has been undertaken as part of this investigation.



# **Contamination Observations**

6.33 No contamination observations were made during the intrusive ground investigation works or the following ground as a groundwater monitoring period.



# 7 GEOTECHNICAL ASSESSMENT

## Introduction

- 7.1 The proposed development is anticipated to comprise up to 55,000m<sup>2</sup> of office space. Details on the design of the proposed development have not been provided to date, however BWB anticipate that development will be no taller than 3 stories and include areas of car parking and limited soft landscaping.
- 7.2 A preliminary development plan (drawing reference 16SK109, undated) is presented as **Appendix 1**. Given the preliminary nature of the development masterplans, no design loadings are available for the proposed development.
- 7.3 Ground conditions were generally found to comprise varying thicknesses of topsoil overlying weathered deposits of the Cornbrash formation to the west of site, with central and eastern areas recording thin deposits of Alluvium and River Terrace Deposits overlying the weathered Kellaways Clay Member underlain by the Cornbrash Formation.
- 7.4 A small amount of Made Ground was recorded in the north western area of the site.

# **Foundation Solutions**

- 7.5 Given the competency of the underlying natural strata in the west of the site, it is considered that shallow spread foundations bearing onto the Kellaways Clay Member and Cornbrash Formation should be suitable for the proposed developments (buildings 1 & 11). Where Alluvium deposits are present (≥2.5m in central and eastern areas (buildings 2 10)), ground improvement techniques may have to be utilised to provide a suitable bearing capacity.
- 7.6 Deeper foundations such as piles are not considered necessary for the proposed development.

### Traditional Spread Foundations

- 7.7 The Topsoil and Made Ground are not suitable materials for setting foundations within due to their potential variable nature leading to excessive settlements when loaded.
- 7.8 Whilst two of the strata encountered underlying the site could all potentially support the likely deign loads for the proposed development, foundations that cross two or more geological boundaries have the potential to be impacted by differential settlement characteristics. Foundations should therefore seek to be founded solely within one strata.
- 7.1 **Table 8** presents estimated safe bearing capacities that could be achieved in the western area of the site for the different foundation types and sizes within the Cornbrash Formation and Kellaways Clay Member.



Table 8	Summary of Safe Bearing Capacities – Western Buildings (No. 1 & 11)

Founding Medium -	Foundation Size & Type						
Description - Deptin	0.6m Strip		1.0m x 1.0m Pad		2.0m x 2.0m Pad		
	(kN/m³	Load (KN)	(kN/m³	Load (KN)	(kN/m³	Load (KN)	
Cornbrash Formation – very dense slightly clayey sandy gravel – 1.0m bgl – circa 65.67mAOD	220	130	320	320	360	1440	
Kellaways Clay Member – very dense slightly sandy gravel – 2.0m bgl	310	180	375	375	375	1500	

7.2 The above bearing capacities have been calculated by applying a safety factor or three to the ultimate bearing capacity for the stratum present on site. Due to limited information provided to BWB regarding potential loadings settlement could not be calculated for the proposed developments. Once design loads are known for the developments then a foundation assessment should be undertaken. Final foundation solutions will have to be re-assessed when the proposed development plan and foundation loadings are confirmed.

<u>Piles</u>

7.3 A piled foundation solution has not been considered at this stage.

### Ground Improvement Techniques

- 7.4 Ground improvement techniques are likely to be required in the central and eastern areas of site (building no. 2 to 10). Ground improvements in the form of vibro stone columns are anticipated to provide a bearing capacity in the region of 150kn/m<sup>2</sup>. However, this would be dependent on the columns terminating into either the firm / stiff mudstone (Kellaways Clay Member) or very dense Cornbrash Formation which are within no more than 2.8m of the current ground level.
- 7.5 A suitable experienced specialist ground improvement contractor should be appointed to confirm the suitability of this technique for use across the site.

## Floor Slabs

- 7.6 Loadings on to a ground bearing floor slab are currently unknown. For the purposes of this assessment it has been assumed that the proposed buildings floor slabs would not exert pressures of more than 25kN/m<sup>2</sup>. Once formation level has been achieved, the material beneath the building footprints should be proof rolled and inspected for signs of soft spots by an engineer. Where identified, these soft spots should be excavated and replaced with an engineered granular material.
- 7.7 Setting floor slabs across different geological strata should be avoided as it could lead to differential settlement issues.
- 7.8 The floor slab settlements should be re-assessed once further details of its construction / loadings are known.



## Roads and Pavements

- 7.9 In total 14 TRL DCP tests were undertaken at selected locations across the Site with inferred CBR results ranging between 3.0 and >100%. It is anticipated that reengineering of the near surface Made Ground and shallow natural ground would be required to provide a suitable development platform.
- 7.10 As a guide it is recommended that roads be designed for 5% CBR, which should be confirmed by in-situ testing once detailed designs are available.
- 7.11 Interim Advice Note 73/06 (IAN73/06) Revision 1 2009 advises that where the in-situ subgrade has an estimated CBR value less than 2.5% it must be improved.

## Drainage

7.12 No permeability testing was undertaken as part of the site investigation. Given the presence of significant thicknesses of cohesive material across the central and eastern areas of site, the construction of shallow soakaways is unlikely to be suitable. Soakaway drainage may be plausible to the west, however this will require confirmation through testing in line with BRE 365 guidance.

## Excavations

### Ease of Excavation

7.13 Excavations using backhoe excavators are expected to be suitable within shallow Made Ground and natural strata across the site.

### Stability of Excavation

7.14 Excavations advanced into the Made Ground and granular deposits are expected to be prone to instability. Where personnel entry is required for inspection; excavations should be sufficiently enlarged and an assessment of safe temporary angles should be assessed. Alternatively, temporary shoring should be provided.

### Legislation on Personnel Entry to Excavations

7.15 It is recommended that no excavations should be entered into without appropriate support and a full risk assessment should be completed prior to entry. Mitigation measures to protect from accumulating ground gases should be implemented.

### Groundwater

- 7.16 Groundwater has been recorded at standing depths of between 0.72m and 3.48m bgl across the site.
- 7.17 Any encountered groundwater across the site may be removed using conventional construction of sumps and submersible pumps, depending on depths and any shoring techniques in place.



# Chemical Attack on Buried Concrete

- 7.18 Design Sulphate (DS) and Aggressive Chemical Environment for Concrete (AC) classes have been determined from BRE digest 2005.
- 7.19 Soluble sulphate concentrations in the soil extracts ranged from 10mg/l to 1000mg/l with pH values ranging from 7.0 to 7.9. Total sulphur concentration ranged from 0.01 % to 0.26 %.
- 7.20 Sulphate concentrations in the groundwater ranged from 88 mg/l to 1100 mg/l with groundwater pH values ranging from 7 to 7.5.
- 7.21 In accordance with the recommendations of BRE Special Digest 1, 'Concrete in Aggressive Ground' 2005, the conditions of the soils at the site would therefore be classified as Design Sulphate Class DS-2 and ACEC Class AC-2 for soils and groundwater, when considering the most appropriate type of concrete to be used at the site in order to resist chemical attack from elevated sulphate present in the soils (assuming mobile groundwater in non pyritic soils).

## **Earthworks**

7.22 No specific earthworks assessments have been undertaken as part of this investigation.



# 8 GROUND GAS ASSESSMENT

### Introduction

- 8.1 A ground gas assessment has been undertaken to assess the risks associated with ground gases and volatile vapours to new buildings and their occupants. The results obtained have been assessed in line with relevant guidance (notably CIRIA 665).
- 8.2 Four gas monitoring visits have been undertaken as part of this assessment.

## Methodology

- 8.3 The ground gas monitoring visits were undertaken by BWB at the site between 24<sup>th</sup> August and 13<sup>th</sup> September 2017.
- 8.4 All borehole locations were installed with ground gas monitoring wells, with response zones targeting the Alluvium, Kellaways Clay Formation and Cornbrash Formation. Exploratory hole records showing the monitoring well construction are presented as **Appendix 2**.
- 8.5 The assessment of potential ground gas generation is based on the observation of trends and changes in gas evolution by the direct measurement of ground gases from gas wells. The works included measurement of methane, carbon dioxide, oxygen, hydrogen sulphide, carbon monoxide, gas flows and barometric pressure. A PID survey was undertaken to measure volatile organic compounds within the borehole response zones.

### Results

8.6 The minimum and maximum steady state concentrations recorded for borehole flow, oxygen, carbon dioxide and methane are summarised below in **Table 9**.

Borehole ID	Targeted Geology	Steady Flo	ow (l/hr)	Carbor (%	n Dioxide Sv/v)	Methar	ıe (%v/v)
		min.	max.	min.	max.	min.	max.
BH101	Cornbrash Formation	<0.1	<0.1	0.1	3.5	<0.1	<0.1
BH102	Cornbrash Formation	<0.1	<0.1	0.4	3.7	<0.1	<0.1
BH103	Kellaways Clay Formation	<0.1	<0.1	0.1	0.7	<0.1	<0.1
BH104	Alluvium	<0.1	<0.1	0.5	1.0	<0.1	<0.1
BH105	Cornbrash Formation	<0.1	<0.1	0.3	0.9	<0.1	<0.1
BH106	Kellaways Clay Formation	<0.1	<0.1	0.8	1.8	<0.1	<0.1
BH107	Kellaways Clay Formation	<0.1	<0.1	0.6	1.5	<0.1	<0.1
BH108	Kellaways Clay Formation	<0.1	0.4	0.2	1.1	<0.1	<0.1

### Table 9 Summary of Recorded Ground Gas Results



Borehole ID	Targeted Geology	Steady Flo	Steady Flow (I/hr)		Carbon Dioxide (%v/v)		Methane (%v/v)	
		min.	max.	min.	max.	min.	max.	
BH109	Alluvium / Kellaways Clay Formation	<0.1	0.4	0.9	1.8	<0.1	<0.1	
BH110	Alluvium / Kellaways Clay Formation	<0.1	<0.1	1.0	1.7	<0.1	<0.1	
BH112	Alluvium / Kellaways Clay Formation	<0.1	<0.1	0.4	1.1	<0.1	<0.1	
BH113	Alluvium / Kellaways Clay Formation	<0.1	<0.1	0.1	0.8	<0.1	<0.1	

### Atmospheric Pressure and Flow

- 8.7 During the monitoring programme completed at the site the atmospheric pressure ranged between 991mb (recorded on 13<sup>th</sup> September 2017) and 1013mb (recorded on 24<sup>th</sup> August 2017).
- 8.8 One monitoring visit was undertaken when atmospheric pressure was recorded below 1000mB, representing a low pressure event and the worst case scenario for the site.
- 8.9 The pressure was recorded as rising during one monitoring visit (13<sup>th</sup> September 2017), as static during one monitoring visits (6<sup>th</sup> September 2017) and falling during two monitoring visits 24<sup>th</sup> & 31<sup>st</sup> August 2017).
- 8.10 On this basis, the monitoring is considered likely to have captured the worst case gassing scenario at the site as generally, ground gas emissions tend to increase when atmospheric pressure falls and particularly when the pressure drops below 1000mB.
- 8.11 During the monitoring period, steady flow rates ranged between <0.1/hr (recorded at multiple locations on numerous visits) and 0.4l/hr (recorded on 31<sup>st</sup> August 2017 in boreholes BH108 & BH109).

#### Hazardous Ground Gas and Volatile Vapours

- 8.12 Steady carbon dioxide concentrations recorded ranged between 0.1% v/v (recorded in several boreholes on several occasions) and 3.7% v/v (recorded on 31<sup>st</sup> August 2017 in BH102).
- 8.13 Steady methane concentrations were recorded at <0.1%v/v in all locations throughout the monitoring period.
- 8.14 Hydrogen sulphide concentrations were not recorded above the limit of detection of the equipment during the monitoring visits.
- 8.15 Carbon monoxide concentrations were generally not recorded above the limit of detection of the equipment during the monitoring visits with the exception of boreholes BH101 and BH103 where concentration ranging between 1ppm and 31ppm were recorded during the visits completed on 24<sup>th</sup> & 31<sup>st</sup> August 2017.



- 8.16 PID concentrations were recorded between <0.1ppm (the limit of detection of the equipment) and a maximum of 0.2ppm in borehole BH110 recorded on 31st August 2017.
- 8.17 Ground gas monitoring results are presented in **Appendix 5**.

# **Risk Assessment**

8.18 CIRIA Report 665 "Assessing Risks Posed by Hazardous Ground Gases to Buildings" presents current best practice on the assessment of ground gases for commercial and residential buildings (with the exception of low rise traditional housing). The report presents a risk based approach based on gas screening levels which depend on both the concentration and emission rate of gas from the ground. Gas screening levels are calculated as follows:

Gas screening value  $(l/hr) = \frac{gas \ concentration \ (\%) \ X \ measured \ borehole \ flow \ rate \ (l/h)}{100}$ 

8.19 From the above results, a maximum gas screening value (GSV) of 0.0148 has been calculated for the site, giving a classification of a Characteristic Situation 1 (CS1) site.

## Recommendations

8.20 It is assumed that the development will fall within a Type C building (office spaces). Based upon the guidance within BS8485:2015, for a CS1 categorisation, ground gas protection measures are not required.



# 9 HUMAN HEALTH RISK ASSESSMENT

- 9.1 Soil contaminant data have been compared against Generic Site Assessment Criteria (GSAC) developed by BWB using the CLEA model 1.06 and the updated CLEA framework (2009) for assessing risk from soil contamination to human health. Details of the derivation of the GSACs are presented in Appendix 10. The results of the soil chemical laboratory results are provided within Appendix 7 with a table summarising the results presented as Appendix 11.
- 9.2 The GSACs have been developed with the following assumptions which have been changed from the CLEA default parameter set. Soil type is a sandy loam with an organic matter content of 1%. This is considered to be more representative of shallow Made Ground found on most Brownfield sites than the CLEA default of 6% organic matter. The building type for a commercial development is assumed to be a post 1970s office which is representative of new commercial buildings.

# Pathways

- 9.3 BWB understand that the site will be developed for a commercial/warehouse end use, with associated offices, car parking and limited soft landscaping areas.
- 9.4 On this basis, contamination data has been compared to the GSACs for a commercial end use (i.e. using all pathways for that end use) based on an organic matter content of 1%. The key receptor for such a site is considered to be an adult female worker.

Source	Shallow	v Soils	Deep Soils
Pathway	Commercial / Industrial with managed landscaped areas	Commercial / Industrial with Hard standing areas	Commercial / Industrial
Ingestion of Soil	$\checkmark$	×	×
Ingestion of site derived household dust	✓	×	×
Ingestion of contaminated vegetables	×	×	×
Ingestion of soil attached to vegetables	×	×	×
Dermal contact with Soil	✓	×	×
Dermal contact with site derived household dust	~	×	×
Inhalation of fugitive soil dust	✓	×	×

9.5 Exposure pathways considered in this assessment are presented in Table 10.



Source	Shallow	Deep Soils	
Inhalation of fugitive site derived household dust	√	×	×
Inhalation of vapours outside	$\checkmark$	√	√
Inhalation of vapours inside	✓	✓	✓

9.6 CLAIRE report "Guidance on Comparing Soil Contamination Data with a Critical Concentration" sets out a structured approach for the statistical assessment of contaminant data with respect to risks to human health. A flow chart showing the approach along with soil screening sheets are presented as **Appendix 11**.

### Sources

### <u>Chemical</u>

- 9.7 The results have shown that all samples sent for analysis have concentrations below the relevant screening criteria for each contaminants.
- 9.8 One hot spot of Total TPH from the sample of Made Ground retrieved from TP102 at 0.1m 0.2m bgl with a concentration of 1,000mg/kg, against an initial screening criteria of 500mg/kg. However, speciated analysis on the same sample has confirmed that all split aliphatic and aromatic banding concentrations are below their relevant screening criteria and therefore do not represent a risk to human health, based on the proposed development.

### <u>Asbestos</u>

9.9 As part of the site investigation, 5 soil samples collected from the Made Ground were tested for the presence of asbestos. A summary of the samples which tested positive for asbestos are summarised in **Table 11** below. Asbestos fibres may present a risk to human health through inhalation of fibres.

Table 11	Summary of Asbestos Results			
Location	Depth (m bgl)	Asbestos Type		
TP102	0.1 – 0.2	Chrysotile – loose fibres		
TP103	0.2 - 0.3	Chrysotile – loose fibres		

9.10 It is noted at this time that the areas where ACMs have been identified are to be located beneath the footprint of a proposed office and car park and, as such, are unlikely to represent a risk to future Site users. During redevelopment the risk to ground workers is increased. Should the Made Ground materials be excavated and placed elsewhere on site appropriate remedial measures must be used i.e. a soil cover system in landscaped areas. Any movement of the Made Ground should therefore be tracked.



# **10 CONTROLLED WATERS RISK ASSESSMENT**

- 10.1 The results of soil leachate analysis and groundwater sampling are presented as **Appendix 7** and **Appendix 8** respectively.
- 10.2 The controlled waters assessment considers the potential impact of on-site contamination to pertinent controlled waters receptors identified at the site including:
  - Secondary A Aquifer beneath the central and eastern areas of site within the River Terrace Deposits;
  - Secondary A Aquifer within the Cornbrash Formation;
  - Two drainage ditches present on site (tertiary rivers);
  - Onsite ponds; and
  - Nearby offsite surface water features.

### **Pathways**

10.3 Controlled water risk assessment has been undertaken through assessment of leachable concentrations of contaminants in soil referring to exposure pathways considered and referencing **Table 10**.

### Table 10 Controlled Water Exposure Pathways

Controlled Waters Exposure Pathway	Receptor
Leaching of soil contamination into recharge infiltration	✓
Vertical migration of impacted pore water through unsaturated zone into underlying aquifer	✓
Horizontal migration of groundwater through aquifer to off site receptors	✓

# Soil Leachability

- 10.4 As part of this investigation, eight soil samples were tested for a leachable metals suite, cyanide, sulphide and pH.
- 10.5 Soil leachate results have been compared directly to water quality standards quoted in Environmental Quality Standards (EQS). A conservative water hardness level of between 50mg/l and 100mg/l CaCO3 has been adopted therefore the upper limit of the EQS standards have been adopted. Where these are not available the UK Drinking Water Standards (UK DWS) 2000 have been used. A summary of the soil leachate concentrations which exceed the guideline concentrations are presented within Table 11.


Table 11	Summary of Leachable Contamination Exceedances												
Leachable Contaminant	Concentration Range (µg/I)	Location and depth (m bgl)	EQS (µg/I)	UK DWS (µg/I)									
Copper	22.0 - 42.0	TP101 (0.2-0.3m), TP101 (0.4-0.5m) & TP102 (0.1-0.2m)	1.0	-									
Lead	1.8 - 6.8	TP101 (0.2-0.3m), TP101 (0.4-0.5m) & TP102 (0.1-0.2m)	1.2	-									
Nickel	4.2	TP101 (0.1-0.2m) & TP102 (0.1-0.2m)	4	-									
Zinc	12	TP102 (0.1-0.2m)	10.9	-									

- 10.6 The leachate screening worksheets are presented as Appendix 12.
- 10.7 Several contaminants including cyanide (total) and mercury are indicated to be elevated on the leachate screening sheet. However, the laboratories lowest detection limit is higher than the screening value used and, therefore, these contaminants are considered to represent a low risk.
- 10.8 The exceedances highlighted above are believed to be marginal due to the limited concentrations of heavy metals recorded within the soils across the site. The proposed development is understood to comprise significant hardstanding and limited soft landscaping, therefore reducing the risks associated with leachable contaminants.

### Groundwater

- 10.9 Ten groundwater samples were collected from installed boreholes on one occasion for subsequent laboratory testing. The groundwater chemical analysis results are presented as **Appendix 8**.
- 10.10 The groundwater testing results have been compared directly to water quality standards and the recorded exceedances are summarised in **Table 12** below.

			ees in ereenaware	-1
Contaminant	Range of Recorded Exceedances (µg/I)	EQS Screening Criteria (µg/l)	UK DWS Screening Criteria (µg/I)	Locations of Exceedances
Copper	1.1 - 8.2	1.0	-	BH102, BH104, BH105, BH106, BH107, BH108, BH110 & BH113
Lead	2.2 - 5.6	1.2	-	BH105 & BH107
Mercury	0.11 - 0.16	0.07	-	BH102 & BH108
Nickel	4.4 - 31.0	4.0	-	BH104, BH105, BH106, BH107, BH110 & BH113
Zinc	11.0	10.9	-	BH108
Sulphate	633 – 1090	400	-	BH106, BH107, BH108 & BH113

 Table 12
 Summary of Recorded Exceedances in Groundwater

10.11 The groundwater screening worksheets are presented as Appendix 13.



- 10.12 Several contaminants including cyanide (total), benzo(a)pyrene and dibenzo(a,h)anthracene are indicated to be elevated on the groundwater screening sheet. However, the laboratories lowest detection limit is higher than the screening value used and, therefore, these contaminants are not considered to represent a risk to the underlying aquifers.
- 10.13 The exceedances of mercury and zinc are only marginally above the screening criteria and are therefore considered unlikely to represent a significant risk to controlled waters when transport mechanism are taken into account.

### Surface Water

10.14 No surface water monitoring has been undertaken as part of this assessment.

### Summary

10.15 Based on the above findings it is considered that the recorded contaminant concentrations are unlikely to pose an unacceptable risk to controlled waters receptors (Secondary A Aquifers within the River terrace deposits and Cornbrash Formation).



# **11 ENVIRONMENTAL RISK ASSESSMENT**

11.1 An updated assessment of identified pollutant linkages has been made following completion of a ground investigation. The preliminary risk assessment presented in **Section 3** has been updated in the light of the findings of the ground investigation and the revised conceptual site model developed, as presented in **Table 13**.

#### <u>Sources</u>

- Asbestos fibres have been identified within the shallow Made Ground; and
- Elevated inorganics within the groundwater beneath site.

#### <u>Pathway</u>

- Inhalation of asbestos fibres; and
- Vertical and lateral migration of contaminated groundwater.

#### <u>Receptor</u>

- Future site users
- Groundworkers;
- Underground concrete surfaces; and
- Wider Secondary A Aquifer.

### Summary of Potentially Significant Pollutant Linkages

11.2 A summary of the identified significant pollutant linkages is provided below. The updated conceptual site model is presented in **Table 13**.

#### Ground Contamination Impact to Human Health (Commercial)

- 11.1 Asbestos fibres have been identified within the Made Ground, this presents a risk to human health receptors associated with a commercial end use through particle dust inhalation.
- 11.2 To mitigate the risk, landscaping areas above areas of Made Ground (including if moved elsewhere on site) will require a soil cover system, with all exposed Made Ground required to be kept damp during the construction phase. The specification should be set out in a remediation strategy and agreed with the local authority before implementation.

#### Groundwater Contamination to Controlled Waters

11.1 Slightly elevated concentrations of heavy metals and sulphate have been identified within groundwater samples, with leachable forms of heavy metals recorded at low concentrations within the Made Ground soil samples. The majority of the heavy metal concentrations have been identified at low concentrations and are considered to present a limited risk.

Following redevelopment, much of the site will be covered (hard standing and buildings) thereby reducing the potential for rainwater to infiltrate the ground and mobilise contamination.

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
<b>S1</b> : Made Ground – presence of asbestos fibres and hotspot of Total TPH	<b>P1:</b> Inhalation of dust particles and dermal contact	R1: End site users	Md	UI	L	It is understood that the development is likely to be predominantly covered by buildings and hardstanding surface cover, therefore limiting any potential contact by the future site user.
						A clean soil cover system is recommended in areas of soft landscaping overlying the Made Ground deposits (including if moved on site) to break the pathway between the asbestos fibres and future site users.
		R2: Construction workers	Construction workers Md Lw M/L The risks to construction and be minimised by the ado PPE and respiratory protect It is recommended the gr damp to minimise the mov			
<b>S4:</b> Elevated inorganic contaminants (sulphate) within the groundwater beneath the site.	<b>P3:</b> Migration of contaminated groundwater	R3: Concrete foundations	crete foundations Md Lw M/L In accordance w BRE Special Diges Ground' 2005, the site would theref Sulphate Class DS soils and groundw		In accordance with the recommendations of BRE Special Digest 1, 'Concrete in Aggressive Ground' 2005, the conditions of the soils at the site would therefore be classified as Design Sulphate Class DS-2 and ACEC Class AC-2 for soils and groundwater.	
		R3: Secondary A Aquifer	Mi	Lw	L	The concentrations recorded are only slightly elevated. Furthermore, it is understood that the
		<b>R4:</b> Tertiary rivers on site (drainage ditches)	Mi	Lw	L	development is likely to be predominantly covered by buildings and hard standing surface cover, therefore limiting leaching and migration of contaminants.

#### Table 13Revised Conceptual Site Model

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
	VH = Very Hig	g <mark>h</mark> , <mark>H = High</mark> , M = Moderate, <mark>M/</mark>	L = Mode	erate/Low	<mark>/</mark> , L = Low	, VL = Very Low
	KEY: Sv = Severe, Md	= Medium, Mi = Mild, Mr = Mino	r Hi = Higl	n, Li = Like	ely, Lw = L	ow Likelihood, UI = Unlikely

#### Pollutant Linkage Assessment Summary

The assessment has established numerous source-pathway-receptor pollutant linkages at the site, which when assessed in the context of proposed development are considered to pose a **low to moderate** risk to human health and **low to moderate** risk to controlled waters.

The majority of pollutant linkages can be easily severed by the use of hardstanding and the use of a clean soil capping layer in landscaped areas above Made Ground deposits.

# 12 ENVIRONMENTAL LIABILITY ASSESSMENT AND DEVELOPMENT CONSTRAINTS

### **Statutory Liability**

- 12.1 The contaminated land regime has implications for those who cause or knowingly permit land to be contaminated, or who own or occupy land that is contaminated.
- 12.2 Contaminated land is defined in Section 78A(2) of Part IIA of the Environmental Protection Act 1990 as:
- 12.3 "Any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under land, that:
  - a) Significant harm is being caused or there is a significant possibility of such harm being caused; or
  - b) Pollution of controlled waters is being or is likely to be, caused."
- 12.4 Harm is defined in Section 78(4) of the Environmental Protection Act 1990 as:
- 12.5 "Harm to the health of living organisms or other interference with ecological systems of which them form part and, in the case of man, includes harm to property."
- 12.6 Once an area of land has been identified as contaminated land, appropriate persons will be identified as being responsible for the cost of cleaning up the land by the enforcing authority. The appropriate person will be liable for all or part of the remediation of the land. Two classes of appropriate person have been identified:
  - Class A appropriate persons are those who cause or knowingly permit the pollutants to be in, on or under the land.
  - Class B appropriate persons are the owners(s) or occupier(s) of the land.
- 12.7 Where no Class A appropriate persons can be identified, then Class B appropriate persons may become liable.
- 12.8 Based on the information available regarding the site, the potential for Statutory Authority action based on "pollution of controlled water" or "significant harm" as defined by Part IIA of the Environmental Protection Act 1990 is considered to be **LOW**.

### Third Party Liability

12.9 Based on the information contained in this report, it is the opinion of BWB that the potential for legal action by surrounding landowners, based on the potential for contamination to migrate off-site, is considered to be **LOW**.

### **Public Relations**

12.10 The likelihood of public relations being tarnished due to contamination issues at the site are considered to be **LOW**.

### **Development Implications**

- 12.11 It is likely that clay land drains will be present across the site, theses may require tracing and removal prior to development of the office units.
- 12.12 Given the presence of ACMs within Made Ground, appropriate mitigation measures will need to be implemented at the time of redevelopment to ensure free fibres are not released into the atmosphere.
- 12.13 A clean capping soil system will be required in landscaped areas positioned above the existing areas of Made Ground. It is possible that the Made Ground could be excavated and used elsewhere on site as part of an earthworks scheme. If this is the case then the material will need to be tracked so the appropriate clean soil cover is provided, or it is placed beneath hard stand to mitigate the risk of asbestos fibre inhalation. A Material Management Plan and CL:AIRE Definition of Waste: Code of Practice (DoW:CoP) declaration represents best practice for such an operation.

# **13 WASTE MANAGEMENT**

### Waste Classification

- 13.1 Soil samples have been characterised against hazardous waste criteria using Hazwasteonline. The results of the waste classification are presented in **Appendix 14**. The assessment indicates that the Made Ground analysed may be classified as hazardous in the area that a hotspot of hydrocarbons were recorded. However, the speciated testing indicates that the concentration is lower than the 1,000mg/kg threshold and so could be reduced to Non-Hazardous. All other samples of the Made Ground were classified as non-hazardous. The waste classification assessment only applies to those soils that have been tested. For the purpose of this assessment, BWB has assumed the materials on site are non-flammable, further laboratory testing is recommended to confirm this.
- 13.2 If other soils are to be disposed of off-site then further analysis may be required.
- 13.3 Asbestos has been found within Made Ground deposits at the site. The presence of visible asbestos containing materials in waste or at concentrations exceeding 0.1% by weight will classify the waste as mixed and require disposal as hazardous waste irrespective of the chemical properties of the waste.
- 13.4 Should any soils require disposal off site an assessment of waste classification of the soils for disposal should be made by a competent person. Further chemical analysis may be required to fully characterise waste soils for disposal to landfill or re-use off site. WAC analysis may be required for disposal of soils as inert or hazardous.

# 14 CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

- 14.1 The ground conditions were found to comprise varying thicknesses of topsoil overlying weathered deposits of the Cornbrash formation to the west of site, with central and eastern areas recording thin deposits of Alluvium and River Terrace Deposits overlying the weathered Kellaways Clay Member underlain by the Cornbrash Formation.
- 14.2 A small amount of Made Ground was recorded in the north western area of the site.

#### <u>Environmental</u>

- 14.3 The environmental risk assessment has identified limited sources of contamination that represent a risk to human health. Loose Asbestos fibres have been recorded with the shallow Made Ground deposits encountered.
- 14.4 Slightly elevated concentrations of sulphate have been identified within the groundwater beneath the site which could represent a risk to concrete foundations. Impact to secondary A Aquifers and surface water features is likely to be restricted based upon the predominately hardstanding cover of the proposed development.
- 14.5 Ground gas monitoring has indicated that the site can be characterised as a CS1 site whereby ground gas protection measures are not required.
- 14.6 The majority of soils across the site are indicated to be classified as non-hazardous with respect to off-site disposal.

#### **Geotechnical**

- 14.7 Shallow spread foundations within the Cornbrash Formation or Kellaways Clay Member should be suitable for the proposed buildings along the western boundary of the site (buildings 1 & 11). For the proposed buildings in the central and eastern area of site ground improvement techniques in the form of vibro stone columns maybe required.
- 14.8 A ground bearing floor slab should be achievable for the proposed development, however the floor slab should avoid spanning different geological strata in order to avoid differential settlement issues.
- 14.9 Design sulphate class DS-2 and ACEC Class AC-2 is required for concrete to resist attack from sulphate levels across the site.

### **Recommendations**

14.10 In order to mitigate the risk posed to human health from asbestos fibres, a clean soil cover system will be required in landscaped areas positioned above the existing Made Ground deposits. It is possible that the Made Ground could be excavated and used elsewhere on site as part of an earthworks scheme. If this is the case then the material will need to be tracked so the appropriate clean soil cover is provided, or it is placed beneath hard stand to mitigate the risk of asbestos fibre inhalation. A Material

Management Plan and CL:AIRE DoW:CoP declaration represents best practice for such an operation.

14.11 The foundation solutions for the proposed development should be re-assessed once final loadings are known.

# **15 REFERENCES**

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DRAWINGS



# DRAWING 1 SITE LAYOUT PLAN



NOTES	
NOT SCALE THIS DRAWING. ALL DIMENS CKED/ VERIFIED ON SITE. IF IN DOUBT AS	SIONS MUCT BE SK.
IS DRAWING IS TO BE READ IN CONJUNC VANT ARCHITECTS, ENGINEERS AND SPI VINGS AND SPECIFICATIONS.	TION WITH ALL ECIALISTS
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LEGEND	
Site boundary	
BWB	
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loor, Waterfront House, Station Street, ngham, NG2 3DQ I5 924 1100 <b>F</b> 0115 950 3966 <b>W</b> bwbconsult	ling.com
ent:	
SLADEN ESTATES	6
ject Title:	
AKEVIEW DRIVE, BICE	STER
wing Title:	
wing Huc.	
SITE LAYOUT PLAI	N
. Date: Drawn	Authorised
to Scale 21.08.17 L.Cross	R.Robinson
ing Status: FINAL	
wing No:	Revision:
DB-BWB-00-XX-EN-DR-0001	F1



# **DRAWING 2**

## **EXPLORATORY HOLE LOCATION PLAN**



Copyright BWB Consulting Lt

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38+Pac		
- 100,044	957	4

Notes
<ol> <li>Do not scale this drawing. All dimensions must be checked/verified on site. If in doubt ask.</li> </ol>
2. This drawing is to be read in conjunction with all
relevant architects, engineers and specialists drawings and specifications.
<ol> <li>All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.</li> </ol>
<ol> <li>Any discrepancies noted on site are to be reported to the participancies of the base of the participancies of the parti</li></ol>
the engineer immediately.
Koy Dian
Legend
Denotes Location of
Trial Pit
↓
BH**
Denotes Location of
Cable Percussive
Borehole
P1         26.09.17         FINAL         PT         RPD           Rev         Date         Details of issue / revision         Drw         Rev
Issues & Revisions
Birmingham   0121 233 3322
Leeds   0113 233 8000
CONSULTANCY   ENVIRONMENT Nottingham   0115 924 1100
INFRASTRUCTURE   BUILDINGS www.bwbconsulting.com
SLADEN ESTATES LTD
Project Title
BICESTER
Drawing Title
LUCATION PLAN
Drawn: P.TAYLOR Reviewed: R.PARKER-DUNN
Drawn:         P.TAYLOR         Reviewed:         R.PARKER-DUNN           BWB Ref:         NTE2366         Date:         26.09.17         Scale@A3:         NTS
Drawn:         P.TAYLOR         Reviewed:         R.PARKER-DUNN           BWB Ref:         NTE2366         Date:         26.09.17         Scale@A3:         NTS           Drawing Status         FINAL         Kerner Status
Drawn:         P.TAYLOR         Reviewed:         R.PARKER-DUNN           BWB Ref:         NTE2366         Date:         26.09.17         Scale@A3:         NTS           Drawing Status         FINAL         Note:         Project - Originator - Zone - Level - Type - Role - Number         Status         Rev



**APPENDICES** 



# **APPENDIX** 1

### **PROPOSED DEVELOPMENT PLAN**



t	project	originator	zone	level	type	role	number	rev
-		DW ·				- <b>A</b>	001	Α



# APPENDIX 2 EXPLORATORY HOLE LOGS

BOREHO	OLE I	LOG							Sca	le 1:2	5		Sheet 1 of 1
LOCATION I	D Proj	ject Nan	ne: Lakeview Drive, Bicest	ter				Gr	ound l	.eve	(m A	<b>OD):</b> 66.67	7
BU101	Proj	ject Nun	nber: NTE2366					Ea	stings:			4576	90.08
DUIO	L Clie	nt:	Sladen Estates Ltd	1				No	Northings			2217	11.42
Hole Type: CF	P Rig:	Dan	ndo 2500 Start & End Date: 14/08/2017				Engineer:			C	Checker:	RPD	
Groundwa	ater		1	Strata			Sampl			In-Situ Tests			
Strike Details	Well	Level (m AOD) & [Thickness (m)]	Descr	ription	Legend	(m bgl)	Type (Ublows)	(m)	To (m)	Туре	Depth (m)	Result	Casing Depth & (Water Level)
		65.67 [1.00] 64.67 [0.55] 64.12	<ul> <li>With low to moderate cobble coarse sub-angular to sub-rou flint and quartzite with rare ti Cobbles of sub-angular brick a (Made Ground)</li> <li>Very dense light brown to yell grey slightly clayey sandy GRA angular limestone. (Cornbrash Formation)</li> <li>Very dense dark grey slightly cobble content. Gravel is fine limestone. Cobbles of sub-ang (Cornbrash Formation)</li> <li>Hole Terminate</li> </ul>	Inded brick, concrete, asp mber, ceramic and glass. and concrete.	halt,	2.00	B D U (100) D	1.00 1.00 2.00 2.50	1.40 2.00 2.10 2.53	s	2.50	50 (9,13/50 for 250mm) 50 (25 for 15mm/50 for 10mm)	1.00m (NR)
Chi	iseling			Romarks			<u> </u>				Leø	end	
From (m bgl) To ( 2.10 2	m bgl) T 2.50	ïme (hh:mm) 00:30	Reason for Termination:	Nemarks			s	ample Ty	/pe:	Gro	oundwa	ter: In-Situ	Tests
Wate From (m bgl) To (	2.50     00:30     Reserved remarks:     B-I       Terminated in hard ground     C - C       Groundwater Remarks:     D - I       ater Added     No groundwater encountered.     Sar								Bulk Sore Sore Sore Sore Sore Sore Sore Sore			undwater C - Cone ke HSV - Ha ting PID - Pho undwater Detectio = Not S - Stand orded Test	Penetration Test ind Shear Vane oto Ionisation n Screen lard Penetration
			Uther Remarks: 1. No olfactory or visual evidence o screen, gas tap and flush cover.	f contamination noted. 2. Inst	talled with 50m	m HDPE	well M S' N	WB Consu Vaterfront tation Stre lottingham IG2 3DQ	disturbed onsulting Ltd ront House Street gham DQ		b: oconsulti 115 924 ottingha wbconsu	ing.com 1100 m Ilting.com	

BUREHUI		UG								Sca	le 1:2	5		Sheet 1 of 1
LOCATION ID	Proj	ect Nan	ne: Lakeview Drive, Bices	ter					Gr	ound l	.eve	(m A	<b>OD):</b> 65.88	3
BH102	Proj	ect Nun	nber: NTE2366						Ea	stings:			4577	57.57
DIIIOZ	Clier	nt:	Sladen Estates Ltd				No	orthing	s:		2216	69.84		
Hole Type: CP	Rig:	Dan	do 2500	Start & End Date:	14/08	8/2017			Engineer:			C	Checker:	RPD
Groundwate	er			Strata				S	Samples				In-Situ Tests	
Strike Details	Well	Level (m AOD) & [Thickness (m)]	Desc	ription		Legend	Depth (m bgl) <sup>(I</sup>	Type Iblows)	From (m)	To (m)	Туре	Depth (m)	Result	Casing Depth & (Water Level)
1.00m bgl after 20mins 2.5m bgl		[0.20] 65.68 [0.50] 65.18 [2.10] 63.08 [0.60] 62.48	Shrubs over firm dark brown CLAY with frequent rootlets t medium sub-angular limeston Rare fragments of brick. (Made Ground) Stiff greyish brown occasiona slightly gravelly CLAY. Gravel i angular limestone. Occasiona (Alluvium) Light brown to yellowish brov GRAVEL with rare pockets of coarse sub-angular limestone (Cornbrash Formation) Very dense dark grey weathe slightly clayey slightly sandy g angular mudstone and limest (Cornbrash Formation) Hole Terminate	slightly sandy slightly gra hroughout. Gravel is fine ne and occasional sandst illy mottled yellow and o is fine and medium sub- al rootlets. wn mottled grey sandy soft clay. Gravel us fine t s. rred LIMESTONE arising a gravel of fine and mediur tone. ed at 3.40m bgl.	avelly e and tone. rrange 50		0.20 0.70 - - - 2.80 - 3.40 - -	B D	2.00	0.70	s	2.00	N=29 (8,16/6,6,9,8) 50 (25 for 75mm/50 for 45mm) 50 (5,15/50 for 215mm)	1.00m (NR) 2.00m (NR) 2.00m (1.00m bgl)
Chiseli From (m bgl) To (m b	ing ogl) Ti	me (hh:mm)		Remarks					• =		-	Leg	end	
0.80 3.00 Water Ad From (m bgl) To (m b	dded	Volume (I)	Reason for Termination: Terminated in hard ground Groundwater Remarks: Groundwater encountered at 2.5m Other Remarks: 1. No olfactory or visual evidence of	n, rising to 1.0m after 20 mir of contamination noted. 2. I	nutes nstalled v	with 50mm	HDPE we	B - C - D - ES - Sar U - BW ell Wai	nple Ty Bulk Core Disturb - Enviro nple Undistu B Consu terfront	pe: oed inmental urbed lting Ltd House	Gro	Grou Strik Rest Grou NR = Recc	ter: In-Situ undwater ke HSV-Ha undwater PID - Pho Detectio orded Test rg.com	Tests Penetration Tess ind Shear Vane oto Ionisation n Screen lard Penetration
			screen, gas tap and flush cover.					Stat Not	tion Stre tingham 2 3DO	et 1	P: 0 E: n @h	115 924: ottingha wbconsu	1100 m Ilting.com	

#### LOCATION ID Project Name: Lakeview Drive, Bicester Ground Level (m AOD): Project Number: NTE2366 Eastings: 457674.00 **BH103** Client: Sladen Estates Ltd Northings: 221478.00 Hole Type: CP Rig: Engineer: LC Checker: Dando 2500 Start & End Date: 14/08/2017 - 15/08/2017 RPD Samples In-Situ Tests Groundwater Strata Casing Depth & (Water Level) Strike Depth From Depth evel (m AOD) & [Thickness (m)] Type Strike Well Description Legend To (m) Туре Result Details . (m bgl) (m) (m) [0.60] 0.00 1.20 В Grass over brown fine SAND with rootlets to 0.25m. (Topsoil) [0.85] 0.60 Dense yellow and grey slightly clayey slightly sandy GRAVEL of fine to coarse sub-angular limestone, quartzite and flint. (River Terrace Deposits) D 1.20 1.20 N=34 1.00m (NR) 1.65 S (1,4/6,6,10,12) [0.45] 1.45 Dense light brown to yellowish brown slightly sandy GRAVEL of fine to coarse sub-angular limestone, flint and quartzite. (River Terrace Deposits) °,\* [2.35] ÷ 1.90 В 1.90 2.20 Very dense grey to dark grey slightly sandy GRAVEL of fine to coarse angular to sub-angular mudstone. (Weathered Kellaways Clay Member) 50 (4.12/50 for 2.00m В 2.20 2.50 S 2.20 D 2.20 3.00 150mm) (1.60m bgl) D 3.00 3.45 S 3.00 N=50 2.00m (5,5/10,10,10,20) (1.60m bgl) В 3.45 4.00 50 (25 for 2.00m D 4.00 4.12 S 4.00 110mm/50 for (1.00m bgl) 10mm) 4.25 Hole Terminated at 4.25m bgl. Legend Chiseling Remarks From (m bgl) To (m bgl) Time (hh:mm) **Reason for Termination:** Sample Type: Groundwater: In-Situ Tests 2.00 4.00 03:00 Terminated in hard ground B - Bulk Groundwater C - Cone Penetration Tes HSV - Hand Shear Va C - Core Strike D - Disturbed **T** Resting Test Groundwater Remarks: PID - Photo Ionisation ES - Environmental Groundwater Detection Screen S - Standard Penetration No groundwater encountered. Sample NR = Not Water Added U - Undisturbed Recorded Test From (m bgl) To (m bgl) Volume (I) Other Remarks: BWB Consulting Ltd Web 1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well bwbconsulting.com Waterfront House Station Street P: 0115 9241100 screen, gas tap and flush cover, 3. Coordinates taken from a hand held GPS unit. Nottingham E: nottingham NG2 3DQ @bwbconsulting.com

### BOREHOLE LOG

Scale 1:25

BOREHO	LEL	OG							Sca	ale 1:2	<u>!</u> 5		Sheet 1 of 1
LOCATION ID	Proj	ect Nam	ne: Lakeview Drive, Bicest	Gr	ound	Leve	(m /	<b>40D):</b> 66.52	-				
	Proje	ect Num	<b>nber:</b> NTE2366	Ea	stings	:		45778	36.90				
DUTA	Clier	ıt:	Sladen Estates Ltd	No	orthing	ζs:		22162	21.63				
Hole Type: CP	Rig:	Dan	do 2500	Start & End Date:	14/08/201	.7		En	gineer	r: L	C	Checker:	RPD
Groundwat	er	L		Strata				Samples				In-Situ Tests	
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Strike Details		(0.25) (0.25) 66.27 [1.75] 64.12 64.12 64.12 	Grass over brown fine SAND v (Topsoil) Firm brown slightly sandy CLA angular to sub-rounded, limes rootlet to 0.6m. (Alluvium) 1.7m - 2.0m: Becomes orangish Stiff dark grey weather MUDS clay. (Weathered Kellaways Forma Hole Terminate	Iption vith rootlets throughout M. Gravel is fine and sub stone and flint. Occasion brown.          TONE arising's as a grav         ition)         2d at 2.40m bgl.	/elly		Ublows B D B D	<ul> <li>(m)</li> <li>0.20</li> <li>1.00</li> <li>1.70</li> <li>2.00</li> <li>2.10</li> </ul>	0.70 0.70 1.45 2.00 2.10 2.13	s s s s s	(m) 1.00 2.00 2.10	N=14 (5,9/6,4,2,2) 50 (25 for 55mm/50 for 35mm) 50 (25 for 10mm/50 for 20mm)	(Water Level) 0.80m (NR) 1.00m (NR) 1.00m (NR)
Chical						<u> </u>	$\Box_{\uparrow}$						
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BH105	Proj	ect Num	nber: NTE2366					Ea	stings:			4576	82.02
	Clier	nt:	Sladen Estates Ltd					No	orthing	gs:		2214	57.75
Hole Type: CP	Rig:	Dan	do 2500	Start & End Date: 15/08/2017				Engineer: LC				Checker: RPD	
Groundwa	ter		T	Strata		Nenth		Sampl	es		Penth	In-Situ Tests	Coring Depth &
Strike Details	Well	[Thickness (m)]	Desi	cription	Legend	(m bgl)	Ublows)	(m)	To (m)	Туре	(m)	Result	(Water Level)
		63.38	Grass over slightly clayey slig is fine to coarse angular to su occasional limestone. (Topsoil) Light brown to yellow slightly coarse angular to sub-angula (Cornbrash Formation)	htly gravelly fine SAND. Grave <i>ib</i> -rounded flint, quartzite an <i>i</i> sandy GRAVEL of fine to <i>i</i> limestone. <i>content noted</i> . <i>content noted</i> . <i>content noted</i> .		0.20	D	0.20	1.20	S	1.20	50 (4,14/50 for 85mm)	1.00m (NR)
Chise	eling			Bomarks							Leg	end	
From (m bgl) To (m 1.20 1.4 Water. From (m bgl) To (m	Added	me (hh:mm) 01:00 Volume (l)	Reason for Termination: Terminated in hard ground Groundwater Remarks: No groundwater encountered. Other Remarks:	B C D E Si U B	ample Ty - Bulk - Core - Disturk S - Envirc ample I - Undist WB Consu	n <b>ple Type:</b> Bulk Core Disturbed Environmental nple Undisturbed		Undwar Grou Strik Rest Grou NR = Recc b:	ter: In-Situ Jindwater C - Cone HSV - Ha Ing Test PID - Pho Detectio S - Stand orded Test	Tests Penetration Test nd Shear Vane oto Ionisation n Screen lard Penetration			
			1. No olfactory or visual evidence screen, gas tap and flush cover.	of contamination noted. 2. Install	ed with 50mr	n HDPE v	well W St N	/aterfront tation Stre lottingham IG2 3DQ	House et	bwt P: 0 E: n @b	 iconsulti 115 924: ottingha wbconsu	ng.com 1100 m Ilting.com	

BUREHUI		.UG								Sca	le 1:2	5		Sheet 1 of 1
LOCATION ID	Proj	ect Nan	ne: Lakeview Drive, Bices	ster					Gr	ound l	.evel	(m /	<b>OD):</b> 65.80	)
	Proj	ect Nun	nber: NTE2366						Ea	stings:			4577	72.49
DUIDO	Clier	nt:	Sladen Estates Ltd						No	orthing	s:		2214	99.77
Hole Type: CP	Rig:	Dan	do 2500	Start & End Date:	16/08	8/2017			En	gineer	: L	.C	Checker:	RPD
Groundwate	er			Strata				S	ampl	es			In-Situ Tests	
Strike Details	Well	Level (m AOD) & [Thickness (m)]	Desc	cription		Legend	Depth (m bgl)	Type Jblows)	From (m)	To (m)	Туре	Depth (m)	Result	Casing Depth & (Water Level)
1.80m bgl after 20mins 2.5m bgl		[Thdres(m)] [0.35] 65.45 [0.85] 64.60 [1.43] 63.17	Grass over slightly clayey slig is fine to coarse angular to su occasional limestone. (Topsoil) Firm brown and yellow slight with occasional rootlets to 0. sub-angular to sub-rounded I (Alluvium) Firm becoming Stiff from 1.7r Gravel is fine and medium su Occasional coarse sand lense (Weathered Kellaways Clay N Hole Terminat	htly gravelly fine SAND. htly gravelly fine SAND. htly gravelly fine SAND. htly sandy slightly gravelly 8m. Gravel is fine and m limestone, flint and quar m slightly sandy gravelly b-angular mudstone. s. Member) ed at 2.63m bgl.	Gravel ite and r CLAY hedium rtzite.		(m bgl) ( 0.35 1.20	B B B B B D D D D	(m) 0.10 0.50 1.00 1.20 2.00 2.55	0.40 1.00 1.45 2.00 2.45 2.63	s s	(m) 1.00 2.00 2.55	N=5 (1,2/1,1,1,2) N=12 (1,2/2,3,3,4) 50 (25 for 65mm/50 for 10mm)	(Water Level) 1.00m (NR) 2.00m (NR) 2.00m (1.80m bgl)
			-			-	-	-+				-		
Chiseli	ing			Remarks								Leg	end	
From (m bgl)     To (m b       2.55     2.60       water Ac       From (m bgl)     To (m b	ogl) Tii ) dded ogl) -	me (hh:mm) 01:00 Volume (l)	Reason for Termination: Terminated in hard ground Groundwater Remarks: Groundwater encountered at 2.5n Other Remarks: 1. No olfactory or visual evidence of screen, gas tap and flush cover.	n, rising to 1.8m	Installed	with 50mm	n HDPE w	B - I C - U D - ES - Sam U - BWN Wat Stat	nple Ty Bulk Core Disturb Enviro nple Undistu B Consu erfront ion Stre	pec onmental urbed lting Ltd House et	Gro	→ o oundwa → Gro Stril C Res <sup>2</sup> Gro NR Rec → Consult 115 924	tter: In-Situ ' undwater C - Cone ke TESV - Ha undwater PID - Phc betection s - Stand orded Test	Tests Penetration Test nd Shear Vane to Ionisation 1 Screen ard Penetration
			solution and and mush covel.					Not	tingham 2 3DO	ı	E: n @h	ottingha wbconsi	im ulting.com	

		LOG								Sca	ale 1:2	25		Sheet 1 of 1
LOCATION	ID Pro	ject Nan	ne: Lakeview Drive, Bices	ster			Gr	ound	Leve	l (m /	<b>\OD):</b> 65.22	<u>!</u>		
   110	- Pro	ject Nur	<b>nber:</b> NTE2366						Ea	stings	:		45786	67.57
ΒΠΤΛ	Clie	ent:	Sladen Estates Ltd						Nc	orthing	gs:		2215(	03.18
Hole Type: C	CP Rig:	: Dan		Start & End Date:	16/08	8/2017			En	igineer	r:	LC	Checker:	RPD
Groundw	vater	Τ		Strata					Samp	les			In-Situ Tests	
Strike Strike	Well	Level (m AOD) &	Des	cription		legend	Depth	Type	From	To (m)		Depth	Result	Casing Depth &
Details		[0.35]	- Grass over slightly clayey slig	shtly gravelly fine SAND.	Gravel		(m bgi)	Ubiows	(m)			(m)		(Water Lever)
Details		(Thickness (m)) [0.35] 64.87 [0.75] 64.87 [0.75] 64.12 [1.20] 62.92 [0.65] 62.27 [0.45] 61.82	Grass over slightly clayey slig is fine to coarse angular to su occasional limestone. (Topsoil) Firm orange slightly sandy sli fine and medium sub-angular quartzite and limestone. (Alluvium) Firm grey mottled orange slig occasional sand lenses. Grave angular to sub-rounded flint (Alluvium) Stiff dark grey gravelly CLAY. angular mudstone. Rare shel (Weathered Kellaways Clay f Very stiff dark grey weather l gravelly clay. (Kellaways Clay Member) Hole Terminal	htly gravelly fine SAND. G ib-rounded flint, quartzit ghtly gravelly CLAY. Grav r to sub-rounded flint, ghtly gravelly CLAY with el is fine and medium sul and limestone. Gravel is fine and mediu Il fragments. Member) MUDSTONE arising's as a ted at 3.40m bgl.	Gravel te and rel is lb- m sub- a		(m bgl) ( 	B B B D D B B D D D D D	(m) 0.10 0.70 1.00 1.00 2.00 2.30 3.00 3.30	0.60 1.00 1.45 1.50 2.45 2.70 3.02 3.31	S S S S	(m) 1.00 2.00 3.30	N=5 (2,1/1,1,1,2) N=8 (2,1/2,2,2,2) N=8 (2,1/2,2,2,2) S0 (25 for 15mm/50 for 5mm) S0 (25 for 5mm/50 for 5mm)	(Water Level) 1.00m (NR) 1.00m (NR) 1.00m (NR) 1.00m (NR)
	<b></b>		1					-			⊢	'		
Cr	hiseling			Bomarks					L			Leg	end	
From (m bgl) To 3.20	(m bgl) T 3.40	Гіте (hh:mm) 01:00	- Reason for Termination:	Remarks				Sa	ample Ty	ype:	Gr	oundwa	iter: In-Situ	Tests
Wat From (m bgl) To	ter Added	Volume (I)	Terminated in hard ground Groundwater Remarks: No groundwater encountered. Other Remarks:					B - C - ES Sa U	- Bulk - Core - Disturt 3 - Envirc ample - Undist	oed onmental :urbed		∠ Gro Stril Res <sup>4</sup> Gro NR Rec	undwater C - Cone I «e HSV - Har ting PID - Pho undwater S - Stand. orded Test PID - Stand. S - Stand.	Penetration Test nd Shear Vane ito Ionisation n Screen ard Penetration
			1. No olfactory or visual evidence screen, gas tap and flush cover.	of contamination noted. 2. I	Installed	with 50mm	HDPE w	rell W Sti No	VB Consu aterfront ation Stre ottinghan G2 3DQ	ilting Ltd House ≗et n	Wel bwł P: C E: r @ł	b: bconsulti )115 924 10ttingha pwbcons	ing.com +1100 am ulting.com	

		.00								Sca	ale 1:2	<u>'</u> 5		Shee	et 1 of 1
LOCATION ID	Proj	ect Nan	ne: Lakeview Drive, Bices	ster					Gr	ound	Leve	l (m /	<b>40D):</b> 67	.15	
011400	Proj	ect Nun	nber: NTE2366						Ea	stings	:		45	7853.6	56
ΒΗΤΛ9	Clier	nt:	Sladen Estates Ltd						Nc	orthing	zs:		22	1611.3	33
Hole Type: CP	Rig:	Dan		Start & End Date:	15/08	3/2017			En	Igineer	r:	C	Checke	er: R	≀PD
Groundwat	er			Strata				!	Samp	les			In-Situ Te	sts	
Strike Strike	Well	Level (m AOD) & [Thickness (m)]	Desc	cription		Legend	Depth (m.bgl)	Type (Ublows)	From (m)	To (m)	Турє	Depth	Result	Casin (Wa	ng Depth &
Strike Details	Vell	Level (m ACO) & [Theorems (m)] [0.40] 66.75 [2.10] 64.15 [0.50] 63.90 - - - - - - - - -	Desc Grass over slightly clayey sligh is fine to coarse angular to su occasional limestone. (Topsoil) Firm grey to greyish brown sli occasional rootlets to 0.65m. sub-angular to sub-rounded s quartzite. Rare shell fragment (Alluvium) Stiff dark grey CLAY with occa Occasional fine shell fragment (Weathered Kellaways Clay N Dark grey MUDSTONE arising fine to coarse sub-angular mi (Kellaways Clay Member) Hole Terminat	ription htly gravelly fine SAND. G ib-rounded flint, quartzit ightly gravelly CLAY with Gravel is fine and mediu sandstone and occasiona ts. asional lenses of fine san its. Vember) g as a slightly clayey grav- udstone. ied at 3.25m bgl.	Jravel         te and         um         al         nd.         rel of		Depth (m bgl)	Type (Ublows) B B D D B	From (m) 0.10 0.40 1.00 2.00 2.50	To (m) 0.40 1.00 1.45 2.45 3.00	Type S S S	2.00	Result           N=7 (1,1/1,2,4)           N=11 (1,2/2,2,4)           50 (25 for 0mm/50 for 10mm)           50 (25 for 0mm/50 for 5)	(wat (wat ) 2,2) 1.00 ,3,4) 2.00 ,r 2.00 mm) 2.00	iter Level) Dm (NR) Om (NR) Om (NR)
Chisel	ling			Bomarks				$\square$	<u> </u>			Leg	rend		
From (m bgl) To (m t 3.00 3.20 Water A From (m bgl) To (m t	ng ygl) Tir , dded bgl)	me (hh:mm) 01:00 Volume (l)	Reason for Termination: Terminated in hard ground Groundwater Remarks: No groundwater encountered. Other Remarks: 1. No olfactory or visual evidence	Remarks	Installed \	with 50mm	HDPE V	Sa B C D E Sa U Well W	ample Ty - Bulk - Core - Disturk S - Envirc ample - Undist WB Consu Vaterfront	ype: Ded Ded Domental Surbed ulting Ltd t House	Gro	Leg Jundwa Z Gro Stril Res: Gro NR Rec b: b: b: b: D: D: D: D: D: D: D: D: D: D	Inter: In-S undwater C - C ke HSV ting PID undwater = Not S - S corded Test ting.com	itu Tests Cone Penetra - Hand Shea - Photo Ioni: ection Scree Standard Per	ration Test Par Vane isation en metration
			screen, gas tap and flush cover.					St N	ation Stre ottingham	et a	P:0 E:r @F	115 924 ottingha	-1100 am ulting com		

BUREHU		.00								Sca	ale 1:2	25		Sheet 1 of 1
LOCATION ID	) Proj	ect Nan	ne: Lakeview Drive, Bices	ster					Gr	round	Leve	l (m /	4 <b>OD):</b> 65.89	÷
	Proj	ect Nur	nber: NTE2366						Ea	stings	:		4579	30.93
RHINA	Clie	nt:	Sladen Estates Ltd						N¢	orthin	gs:		2215	41.14
Hole Type: CP	Rig:	Dan	- ido 2500	Start & End Date:	17/08,	/2017			En	Iginee	r:	LC	Checker:	RPD
Groundwa	iter			Strata				!	Samp	les			In-Situ Tests	. <u></u> ;
Strike Strike	Well	Level (m AOD) & [Thickness (m)]	Des	cription		Legend	Depth	Type (Ublows)	From	To (m)	Туре	Depth	Result	Casing Depth &
Strike Details	Image: state	Leve(m ACO) & [Pinkerser (m)] [0.35] 65.54 [2.25] - - - - - - - - - - - - -	Crass over slightly clayey slig is fine to coarse angular to su occasional limestone. (Topsoil) Firm light and brown slightly with occasional rootlets to 0. medium sub-angular to sub-r limestone. Occasional shell fr (Alluvium) Stiff dark grey gravelly CLAY. mudstone. Occasional shell fr (Weathered Kellaways Clay f Very dense dark grey weather slightly sandy gravel of fine s (Cornbrash Formation) Hole Terminat	ription htly gravelly fine SAND. G ib-rounded flint, quartzit sandy slightly gravelly CL .75m. Gravel is fine and rounded flint, quartzite a ragments. Gravel is fine and sub-aną 'ragments. Member) ered LIMESTONE arising a ubangular limestone. ted at 3.30m bgl.	Gravel te and LAY and gular as a		Depth (m bgl) 0.35 	Type [Ublows] B B D D	From (m) 0.10 0.70 1.00 2.00 3.00	To (m) 0.60 1.00 1.45 2.45 3.01	Type S S S	2.00 3.30	Result           N=6 (1,1/1,1,2,2)           N=11 (1,2/2,2,3,4)           50 (25 for           5mm/50 for 0mm)           50 (25 for           0mm/50 for 0mm)	Casing Depth & (Water Level) 1.00m (NR) 1.00m (NR) 1.00m (NR) 1.00m (NR)
Chise	oling			D					<u> </u>				rend	
From (m bgl) To (m 3.10 3.3 Water. From (m bgl) To (m	Installed w	vith 50mm	HDPE w	Sa B C D ES S S V V Vell	imple Ty - Bulk - Core - Disturk 5 - Envirc ample - Undist WB Const Vaterfront	/pe: Ded Domental turbed ulting Ltd t House		Leg Jundwa Z Gro Stril ■ Res Gro NR Rec 2b: tbconsul <sup>2</sup>	tter: In-Situ ' undwater C - Cone ke HSV - Ha pundwater PID - Phc pundwater = Not corded Test ting.com	Tests Penetration Test nd Shear Vane sto Ionisation n Screen lard Penetration				
			screen, gas tap and flush cover.					St; Nr N	ation Stre ottingham G2 3DQ	et? ?	P: 0 E: r @t	1115 924 10ttingha 2wbcons	+1100 am sulting.com	

BUREF		L	UG								Sca	le 1:2	25		Sheet 1 of 2
LOCATION	N ID Pr	roje	ect Nan	ne: Lakeview Drive, Bices	ster					Gr	ound l	leve	l (m /	AOD): 65.65	5
	1 <b>n</b> Pr	roje	ect Nun	nber: NTE2366						Ea	stings			4580	02.12
DUT		lien	t:	Sladen Estates Ltd						No	orthing	s:		2215	39.73
Hole Type:	CP Ri	ig:	Dan	do 2500	Start & End Date:	17/08	8/2017			En	gineer	: I	C	Checker:	RPD
Ground	water				Strata				S	ampl	es			In-Situ Tests	
Strike Strike	e Wel	1	Level (m AOD) & [Thickness (m)]	Desc	cription		Legend	Depth (m.bgl)	Type Ublows)	From (m)	To (m)	Туре	Depth	Result	Casing Depth &
Strike Detail			63.45 [1.20] 62.15	Grass over slightly clayey slig         is fine to coarse angular to su         occasional limestone.         (Topsoil)         Firm light brown slightly sand         medium sub-angular to sub-         sandstone gravels. Rare relic         (Alluvium)         Firm dark grey gravelly becord         is fine and medium sub-angul         (Weathered Kellaways Clay No         3.0m - 3.4m: Becomes stiff.         Very dense dark grey weather         slightly sandy gravel of fine and         limestone.         (Cornbrash Formation)         Hole Terminat	ription htly gravelly fine SAND. ub-rounded flint, quartzi dy CLAY with rare fine ar rounded quartzite and rootlets to 0.55m. ming very gravelly CLAY. ular mudstone. Member) 	Gravel ite and nd Gravel		(m bgi) 0.35 0.35 2.20	B B D D B B B D	(m) 0.10 0.40 1.00 2.00 2.50 3.00	To (m) 0.40 0.90 1.45 2.45 3.00 3.38	s s c	2.00 3.50	Result N=7 (1,1/1,2,2,2) N=14 (1,2/3,3,4,4) 48 (2,3/48 for 230mm) 50 (25 for 5mm/50 for 0mm)	(Water Level) (Water Level) 1.00m (NR) 2.00m (NR) 3.00m (NR)
				-				-							<u> </u>
	Chi li													and	
From (m bgl)	Chiseling To (m bgl)	Tin	ne (hh:mm)	Reason for Termination:	Remarks				Sar	nple Tv	/pe:	Gro	Leg	ena ater: In-Situ	Tests
3.40	3.50 Nater Added To (m bgl)		01:00 /olume (l)	Terminated in hard ground Groundwater Remarks: No groundwater encountered. Other Remarks:					B - C - ES - Sar U -	Bulk Core Disturk - Enviro nple Undist	ped primental urbed		C Gro Stri C Res Gro NR Rec	ke HSV-Ha ke HSV-Ha ting Test PID-Pho Detectio = Not S-Stanc orded Test	Penetration Test ind Shear Vane oto Ionisation n Screen lard Penetration
				1. No olfactory or visual evidence screen, gas tap and flush cover.	of contamination noted. 2.	Installed	with 50mn	n HDPE w	ell Wai Stat Not	B Consu terfront tion Stre ttingham 2 3DO	Ilting Ltd House eet 1	We bwl P: C E: r	b: bconsult )115 924 nottingha	ing.com 1100 am ulting.com	

Sheet 1 of 1

BOREH	OLE L	.0G						Sc	ale 1:2	<u>!</u> 5		Sheet 1 of 1
LOCATION	ID Proj	ect Nan	ne: Lakeview Drive, Bices	ster			Gr	round	Leve	l (m /	<b>\OD):</b> 65.97	·
8H11	<b>7</b> Proj	ect Nun	nber: NTE2366				Ea	stings	:		4580	75.45
	Clier	nt:	Sladen Estates Ltd				No	orthing	gs:		22158	32.76
Hole Type: C	CP Rig:	Dan	do 2500	Start & End Date: 17/08	3/2017		En	iginee	r: L T	.C	Checker:	RPD
Groundw Strike	vater	Level (m AOD) &	T	Strata	Dept <sup>1</sup>	h <sub>Type</sub>	Sampi		+	Depth	In-Situ Tests	Casing Depth &
Strike Details	Weii	[Thickness (m)]	- Grass over slightly clayey slig	ription	Legend (m bgl	(Ublows	<sup>s)</sup> (m)	To (m)	Туре	(m)	Result	(Water Level)
		63.97 [1.00] 63.97 [1.00] 62.83 62.83	Grass over signity clayey sign is fine to coarse angular to su occasional limestone.         (Topsoil)         Firm orange slightly sandy slig fine and medium sub-angular quartzite and limestone.         (Alluvium)         Stiff dark grey gravelly CLAY. C angular mudstone.         (Weathered Kellaways Clay N         Very dense dark grey weathe slightly sandy gravel of fine a limestone.         (Cornbrash Formation)         Hole Termination	Tilly gravelly fine SAND. Gravel         b-rounded flint, quartzite and         ghtly gravelly CLAY. Gravel is         r to sub-rounded flint,         3ravel is fine and medium sub-         Jember)         Pred LIMESTONE arising as a         nd medium subangular         ed at 3.14m bgl.		B B D B D	0.10 0.60 1.00 2.00 2.00 3.00	0.60 1.00 1.45 2.45 2.50 3.14	S S S	1.00	N=6 (1,1/1,2,1,2) N=8 (1,1/1,2,2,3) S0 (37 for 140mm/50 for 0mm) S0 (25 for 5mm/50 for 0mm)	1.00m (NR) 1.00m (NR) 1.00m (NR)
Cł From (m bgl) To	hiseling	ime (hh:mm)		Remarks						Leg	end,	
3.10 Wat From (m bgl) To	iter Added	01:00	Reason for Termination: Terminated in hard ground Groundwater Remarks: No groundwater encountered. Other Remarks:			S E C I I I I I I I I I I I I I I I I I I	3 - Bulk C - Core D - Disturk ES - Envirc Sample U - Undist BWB Const	ype: Ded Donmental turbed ulting Ltd	Gro	C Grou Stril	ter: In-Situ I undwater C - Cone I ke HSV - Har ting PID - Pho undwater Not S - Stand corded Test	Tests Penetration Test nd Shear Vane to Ionisation n Screen ard Penetration
			<ol> <li>No olfactory or visual evidence of screen, gas tap and flush cover.</li> </ol>	E well	Naterfront Station Stre Nottinghan NG2 3DQ	House ≥et n	bwb P: 0 E: r @b	oconsulti 115 924 ottingha wbcons	ing.com µ100 am ulting.com			

			UG							Sca	ıle 1:2	!5		Sheet 1 of 1	
LOCATIO		Proje	ect Nam	ne: Lakeview Drive, Bices	ter					Gr	ound I	eve	l (m A	<b>AOD):</b> 64.63	}
вц1,	12	Proje	ect Nun	nber: NTE2366						Ea	stings:			4580	87.80
DITT.	1.2	Clien	it:	Sladen Estates Ltd						No	orthing	s:		2213	73.13
Hole Type:	CP F	Rig:	Dan	do 2500	Start & End Date:	15/08	3/2017			En	gineer	: L	_C	Checker:	RPD
Ground	dwater				Strata				9	Sampl	es			In-Situ Tests	
Strike Strik	e vils We	ell	Level (m AOD) & [Thickness (m)]	Desc	ription		Legend	Depth (m bgl)	Type Ublows)	From (m)	To (m)	Туре	Depth (m)	Result	Casing Depth & (Water Level)
1.000 bgl aft 20min 1.2m h	m ter ns bg		63.13 63.13 63.13 63.13 63.13 63.13 60.40] 60.4	Grass over slightly clayey sligh is fine light coarse angular ligh and occasional limestone. (Topsoil) Soft light brown mottled grey slightly sandy slightly gravelly 0.6m. Gravel is fine and medii shell fragments. Occasional sa (Alluvium) Light brown and orange grave Gravel is fine and medium sul quartzite. (River Terrace Deposits) Firm dark grey CLAY with occa Rare fine shell fragments. (Weathered Kellaways Clay N Weathered Kellaways Clay N Very dense dark grey weathe slightly sandy gravel. (Cornbrash Formation) Hole Terminate	Itly gravelly fine SAND. Control to the sub-rounded flint, quadity and occasionally orange in CLAY with occasional rourn sandstone and occasional lenses. Event Sand Lenses. Event Sandstone and assional lenses of fine san Aember) red LIMESTONE arisings Eed at 4.40m bgl.	Gravel artzite e bots to sional d d as a		- 1.50 - 1.90 - 4.30 - 4.40	B D B D (32) D B	0.20 1.20 1.50 2.45 3.00 3.45 3.80 3.90	1.20 1.65 1.90 2.45 3.00 3.45 3.55 4.15 4.10	s	2.00	N=11 (1,2/3,3,3,2) N=11 (1,2/3,3,3,2) N=7 (1,1/1,2,2,2) 50 (25 for Omm/50 for 0mm]	1.00m (NR) 2.00m (NR) 3.00m (1.00m bgl) 3.00m
From (m bgl)	Chiseling To (m bgl	)Tir	ne (hh:mm)		Remarks						•	-	Leg	end	
From (m bgl)	Water Adde	ed	Volume (I)	Reason for Termination: Terminated in hard ground Groundwater Remarks: Groundwater encountered at 1.2m Other Remarks:	η, rising to 1.0m				Sa B C D ES Sa U	mple Ty - Bulk - Core - Disturb - Enviro ample - Undist	v <b>pe:</b> Ded Donmental urbed	Gro	C Grou Strik Rest Gro NR : Rec	ter: In-Situ undwater C - Cone ke HSV - Ha ting PID - Pho undwater S - Stand orded Test	Tests Penetration Test nd Shear Vane >to lonisation n Screen ard Penetration
				1. No olfactory or visual evidence of screen, gas tap and flush cover.	of contamination noted. 2. II	I HDPE w	ell W Sta	VB Consu aterfront ation Stre ottingham G2 3DO	Ilting Ltd House eet	Wel bwb P: 0 E: n @b	b: oconsulti 1115 924 ottingha wbconsi	ing.com 1100 am ulting.com			

Decision Integer       Project Name:       Lakevice Drive; Bircske:       2.20         TP1010       Project Name:       Stade Transition       Stade Transition       Stade Transition       Stade Transition       Doi:       PID Dimension       Stade Transition       Stade Transit Transition       Stade Transition       Stade T	TRIAL	PIT	LO	G									Scale: 1	:25		Sheet 1 of 1
Project Number:       NTI2360       Out       Stability:       Perministicity:       Perministity:       Perministity: <t< th=""><th>LOCATION ID</th><th>D: Pro</th><th>ject N</th><th>lame</th><th>: Lake</th><th>eview Drive, Bicest</th><th>er</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>2.20</th><th></th></t<>	LOCATION ID	D: Pro	ject N	lame	: Lake	eview Drive, Bicest	er								2.20	
Inter-Type:       Description       Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>	TD101	Pro	ject N	lumb	er: NTE	2366							c [	D.1 D.		( ) 0
Intel Time Plant:         Itel Time Plant:		Clie	ent:		Slad	len Estates Ltd						U	.65	PIT DIN	iensio	Degrees
Ground local (mAOD):       65:30       Eastings & Northings:       45:7678E 221086N       Engineer:       LC       Checker:       Ref         Same Sets Same	Hole Type: TP	Pla	nt: J	CB 30	X	Start & End Date	:	15/08/2017				Stabili	y: Re	main s	table t	hroughout
Groundwise In the rise, lacked needs         Interpretation (response)         Description (response)         Description (response)         The second (response)         Interpretation (response)         The second (response)         Interpretation (response)         Inter	Ground Level	(m A0	OD):	66.	.30	Eastings & North	ings:	457678E 221686N				Enginee	er: LC		Che	cker: RPD
Sinke         Sinke         Data         Description         Impart (m)         Type         Nummer (n)	Groundwater					St	rata					Sample	s		In-S	itu Tests
I 3m     Grass over trovent gravely SAMD with frequent rootlets.     Grass over trovent gravely SAMD with frequent rootlets.     Grass over trovent gravely SAMD with frequent rootlets.       I 3m     Grass over trovent gravely SAMD with frequent rootlets.       I 3m     Grass over trovent gravely SAMD with frequent rootlets.       I 3m     Grass over trovent gravely SAMD with frequent rootlets.       I 3m     Grass over trovent gravely SAMD with frequent rootlets.       I 3m     Grass over trovent gravely SAMD with frequent rootlets.       I 3m     Grass over trovent gravely SAMD with frequent rootlets.     Grass over trovent gravely SAMD with frequent rootlets.     Grass over trovent gravely SAMD with frequent rootlets.       I 3m	Strike Details	Backfill	Level (m AOD)	Thickn ess			Descriptior	ו 	Lege	nd <sup>Depth</sup> (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	Result
130       140       1			65.95	0.35m 0.35m	Grass o Gravel i with ra (Made Brown COBBLE	is fine to coarse ar re inclusions of bri Ground) occasionally yellov E of angular limest	wish brow	with frequent rootlets. sub-angular limestone ic and timber. wn slightly sandy grave vel is fine to coarse	lly	0.35	ES ES	0.20	0.30 0.50			
a.10       Firm dark grey mottled light brown slightly sandy gravelly CLAX. Gravel is fine and medium mudstone. (Weathered Kellaways Formation)       1.20       0       1.70       1.80         a.200       a.200       a.200       Dark grey slightly sandy GRAVEL with low to moderate cobble content. Gravel is fine to coarse sub-angular mudstone. Cobbles of sub-angular mudstone. Cobbles of sub-angular mudstone. Cobbles of sub-angular mudstone. Cobbles of sub-angular mudstone.       8       2.20       2.30         Image: State of the sub-angular mudstone.       Note Terminated at 2.30m bgt.       1.80       1.80       1.80         Image: State of the sub-angular mudstone.       Note Terminated at 2.30m bgt.       1.80       1.80       1.80         Image: State of the sub-angular mudstone.       Note Terminated at 2.30m bgt.       1.80       1.80       1.80         Image: State of the sub-angular mudstone.       Note Terminated at 2.30m bgt.       1.80       1.80       1.80         Image: State of the sub-angular mudstone.       Note Terminated at 2.30m bgt.       1.00       1.00       1.00       1.00         Image: State of the sub-angular mudstone.       Note Terminated at 2.30m bgt.       1.00       1.00       1.00       1.00         Image: State of the sub-angular mudstone.       Note Terminated in hard ground       Image: State of the sub-angular mudstone.       Image: State of the sub-angular mudstone.       Image:	➡ 1.3m bgl	<ul> <li>COBBLE of angular limestone. Gravel is fine to coarse angular to sub-angular limestone. (Reworked Natural Ground)</li> <li>Grey and yellow slightly sandy GRAVEL with medium cobble content. Gravel is fine to coarse angular to su angular limestone. Cobbles of sub-angular limestone (Weathered Cornbrash Formation)</li> <li>1.3m bgl</li> <li>64.70</li> <li>Firm dark grey mottled light brown slightly sandy grad CLAY. Gravel is fine and medium mudstone.</li> </ul>									BES	0.80	0.90 1.00			
B       2.00       Dark grey slightly sandy GRAVEL with low to moderate coble content. Gravel is fine to coarse sub-angular mudstone. (Weathered Combrash Formation)       2.00       B       2.20       2.30         Mode       Mode       Mode Terminated at 2.30m bgl.       2.00       B       2.00       2.00       Dark grey slightly sandy GRAVEL with low to moderate coble content. Gravel is fine to coarse sub-angular mudstone. (Weathered Combrash Formation)       2.00       B       2.20       2.30         Hole Terminated at 2.30m bgl.       Hole Terminated at 2.30m bgl.       Dark grey slightly sandy GRAVEL with low to moderate coble content. Gravel is fine to coarse sub-angular mudstone. (Weathered Combrash Formation)       Example		64.70 64.70 Firm dark grey mottled light brown slightly sandy grave CLAY. Gravel is fine and medium mudstone. (Weathered Kellaways Formation)								1.60	D ES	1.70 1.70	1.80 1.80			
Remarks       Legend         Reason for Termination:       Samples:       Groundwater Strikes:       In-Situ Tests:         Terminated in hard ground       B - Bulk       Oroundwater Strikes:       In-Situ Tests:         Groundwater Notes:       Seepage noted from 1.3m       Sample       Groundwater         Others Democrative       Others Democrative       Others Democrative       For the second strike in			64.00	0.20m	Dark gr cobble mudstc (Weath	ey slightly sandy G content. Gravel is one. Cobbles of sub rered Cornbrash Fo Hole Term	GRAVEL v fine to c b-angula prmation inated at 2	vith low to moderate oarse sub-angular r mudstone. .) 2.30m bgl.		2.30	В	2.20	2.30			
Reason for Termination:     Samples:     Groundwater Strikes:     In-Situ Tests:       Terminated in hard ground     B - Bulk     Groundwater Strikes:     HSV - Hand She       D - Disturbed     D - Disturbed     Strike     Vane Test       Seepage noted from 1.3m     Sample     Groundwater     Groundwater						Remarks						1		Lege	nd	
Utner Kemarks:         1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.         BWB Consulting Ltd Waterfront House Station Street Nottingham         BWB Consulting.com E: nottingham @bwbconsulting.com	Reason for Terr Terminated in H Groundwater N Seepage noted Other Remarks 1. No olfactory	mination nard gro Notes: from 1 s: or visu	on: ound 3m al evic	lence	of contam	ination noted. 2. Bac	ckfilled wi	th arising's upon complet	ion.		Sample B - Bulk D - Dist ES - Env Sample BWB Co Waterfi Station Notting	es: urbed vironmenta onsulting L ront House Street ;ham	Grour	Grour Strike Restir Grour Level b: b: b: b: b: b: b: b: b: b: b: b: b:	i <b>trikes:</b> Indwater Indwater Indwater Ing.com In Iting.com	In-Situ Tests: HSV - Hand Shear Vane Test PID - Photo Ionisation Detector Test

TRIA	۱L P	IT LC	)G									Scale: 1	:25		S	sheet 1 of 1
LOCATIC	ON ID:	Project	Name	e: Lak	eview Drive, Biceste	er								1.90		
TP1	02	Project	Num	ber: NTE	2366						C		Dit Din	nonsio		] 0
•••		Client:		Slac	Jen Estates Ltd						U	.05			15 (11)	Degrees
Hole Type:	ТР	Plant:	JCB 3	CX	Start & End Date:	: 1	15/08/2017			$ \rightarrow $	Stabilit	:y: Rei	main s	table t	hroughc	out
Ground L	.evel (	m AOD):	66	5.34	Eastings & Northi	ings: 4	157715E 221705N			E	Inginee	er: LC	<del></del>	Che	cker: F	RPD
Groundwa	iter		Trick		Str	rata				5	Sample	:s	<b> </b>	In-Si	itu Tests	5
Strike Det	rike tails Bar	ckfill AOD)	n Thickr ess		D	Description		Legend	Depth (m bgl)	Туре	From (m)	To (m)	Туре	Deptn (m)	Re	esult
Strike Det		Deput (mbpl)	Type ES ES D	From (m) 0.10 0.40 0.70	To (m) 0.20 0.50 0.80 2.20	Туре		Re	esult							
			+					+								
					Remarks								Lege	nd		
Reason for Terminated Groundwa Groundwa Other Rer	r Termi d in har ater Nc ater en marks:	ination: rd ground ites: countered	at 1.7	'm						Samples B - Bulk D - Distu ES - Envi Sample BWB Cc	Jirbed ironmenta	Groun	dwater S Groun 7 Strike — Restin Grour Level	idwater Ig Idwater	In-Situ Tes HSV - Han Vane Test PID - Phot Detector 7	<b>sts:</b> d Shear :o lonisation Test
Other Remarks:       BWB Consulting Ltd       Web:         1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.       BWB Consulting Ltd       Web:         Station Street       Station Street       E: nottingham       @bwbconsulting.com         NG2 3DQ       P: 0115 9241100       P: 0115 9241100													oconsultir ottinghar wbconsu 0115 9241	าg.com ท lting.com 1100	CONSULTANCY	Y   ENVIRONMENT URE   BUILDINGS

TRIAL P	PIT LO	C					Scale: 1	:25		Sheet 1 of 1				
LOCATION ID:	Project	Name	: Lakeview Drive, Bicester						2.10					
TP103	Project	Numb	er: NTE2366			ſ	1 65	Pit Din	nensio	ns (m) 270				
	Client:		Sladen Estates Ltd							Degrees				
Hole Type: TP	Plant:	JCB 30	CX         Start & End Date:         15/08/2017           D2         Endition & Number of Start &			Stabili	ty: Re	main s	table t	hroughout				
Ground Level (	m AOD):	66	.22 Eastings & Northings: 457/66E 221691N			Engine	er: LC		Che	cker: RPD				
Strike Strike Pa	ckfill Level	(m Thickn	Strata	Logond De	pth Tupe			Tupo	Depth					
Strike Details Ba		) ess	Shrubs over brown slightly clayey gravelly SAND. Gravel is	Eegend (m	<sub>bgl)</sub> Type	FIOIT (III)	10 (m)	Type	(m)	Result				
	65.4	0.80m	fine to coarse angular to sub-rounded brick, concrete, flint with occasional glass, timber and plastic. Cobbles of concrete from 0.45m. (Made Ground)		ES	0.20	0.30							
		0.30m	is fine and medium sub-angular to sub-rounded flint,		ES	0.90	1.00							
1.7m bgl 1.70m bgl after 20mins	65.1	2 1.25m	Imestone and quartzite. (Alluvium) Light grey and orange slightly sandy GRAVEL with medium cobble content. Gravel is fine to coarse angular to sub- angular limestone. Cobbles of sub-angular limestone. (Weathered Cornbrash Formation) Hole Terminated at 2.35m bgl.		35									
Reason for Term Terminated in ha Groundwater No Steady ingress no Other Remarks: 1. No olfactory o	ination: rd ground otes: oted from r visual ev	1.7m //idence	Remarks of contamination noted. 2. Backfilled with arising's upon completion	Sampl B - Bul D - Dis ES - Er Sampl BWB C Water Station	es: k turbed vironment e front Hous s Street	Grour al	Lege dwater S Grour Strike Restir Grour Level b: b: b: b: b: b: b: b: b: b:	nd Strikes: ndwater ng.com m	In-Situ Tests: HSV - Hand Shear Vane Test PID - Photo Ionisation Detector Test					
					Nottin NG2 3	gham DQ	@b P: C	wbconsu 115 924:	lting.com 1100	CONSULTANCY   ENVIRONMENT INFRASTRUCTURE   BUILDINGS				
TRIAL P	IT LC	G									Scale: 1	:25		Sheet 1 of 1
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LOCATION ID:	Project N	lame	: Lake	eview Drive, Bicest	ter								2.00	
TD104	Project N	lumb	er: NTE	2366										, 90
11104	Client:		Slad	len Estates Ltd						0	.65	PIT DIM	iensioi	ns (m) Degrees
Hole Type: TP	Plant: J	CB 3C	X	Start & End Date	<b>e:</b> 1	5/08/2017				Stabili	ty: Re	main s	table t	hroughout
Ground Level (	m AOD):	65.	63	Eastings & North	nings: 4	57606E 221547N			E	Inginee	er: LC		Che	cker: RPD
Groundwater				Si	trata				9	Sample	es		In-S	itu Tests
Strike Details Ba	ckfill Level (m AOD)	Thickn ess			Description		Leger	nd (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	Result
1.6m bgl 1.60m bgl after 20mins	65.28	0.35m	Grass o rootlets and occ (Topsoi Browni high co sub-aną (Weath	ver slightly clayey s. Gravel is fine an casional quartzite. I) sh orange and yel bble content. Gra gular limestone. C ered Cornbrash Fo Hole Tem	slightly gr d medium low slightly vel is fine t lobbles of l ormation)	avelly fine SAND with sub-angular limestor y sandy GRAVEL with to coarse angular to imestone. 75m bgl.	le	0.35	B	0.40 0.40	0.50 1.00			
		1		Remarks			I	1		1	1	Lege	nd	1
Reason for Term Terminated in ha Groundwater No Slow ingress note Other Remarks:	ination: rd ground otes: ed from 1.6	m					Samples B - Bulk D - Distu ES - Envi Sample BWB Co	s: ironmenta onsulting L	Grour	Grour Strike Restin Grour Level	<b>strikes:</b> udwater g udwater	In-Situ Tests: HSV - Hand Shear Vane Test PID - Photo Ionisation Detector Test		
1. No olfactory o	o olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.											oconsultii ottinghai wbconsu 115 9241	ng.com n lting.com l100	BANG I ENVIRONMENT INFRASTRUCTURE   BUILDINGS

TRIAL	PIT	LO	G															Scale: 1	.:25		(	Sheet 1 of 1
LOCATION II	D: Pro	oject N	lame	: Lake	eviev	v Driv	e, Bice	ester												2.00		
	Pro	oject N	lumb	er: NTE	236	6																45
11103	Cli	ent:		Slad	den E	states	s Ltd										Ĺ	0.65	Pit Dir	nensio	ns (m)	Degrees
Hole Type: TP	Pla	nt: J	CB 30	X	Sta	rt & E	nd Da	ite:	1	15/08/	2017						Stabili	ty: Re	mains	stable t	hrough	out
Ground Leve	l (m A	OD):	65.	.00	Eas	tings	& Nor	rthings:	: 4	157642	2E 221	476N				E	Engine	er: LC		Che	cker:	RPD
Groundwater								Strata									Sample	es		In-S	itu Test	:S
Strike Details	Backfill	Level (m AOD)	Thickn ess					Descri	iption					Legend	Depth (m bgl)	Туре	From (m	To (m)	Туре	Depth (m)	R	esult
		64.60	0.40m	Grass o SAND w angular (Topsoi	over l with r to c il)	browr freque quartz	n slight ent roo tite, fli	tly claye otlets. ( nt and	ey gra Grave limes	avelly find	fine ar	nd medi oarse	um		0.40							
		64.30	0.30m	frequer (Alluviu	nt ro um)	otlets	and o	organic	matt	er.			With	ماند ماند ماند ماند ماند ماند	-	D ES	0.50 0.50	0.60 0.60				
			0.50m	Yellow a sub-ang relic roo (Alluviu	and gular ots a um)	grey s lime: Ind or	andy ( stone a ganic i	GRAVEI and she matter.	L of fi ell fra	ine to agmen	coarse ts. Oc	e angula casional	r to	NHC. NHC.		ES	0.80	0.90				
1.25m bgl 1.25m bgl after 20mins		63.80	0.80m	Yellowis content limesto (Weath	ish gi it. Gr one. ( nerec	rey sli <sub>i</sub> avel is Cobbli I Corn	ghtly s s fine t es of s Ibrash	sandy G to coars sub-ang Forma	GRAVI se an gular ition)	EL with gular t limest	h high :o sub- one.	cobble -angular	-		+ 1.20 							
		63.00					Hole Te	erminated	d at 2.	00m bg	Ι.											
						P	omarl	/6														
Reason for Ter	minat	ion:				ĸ	endfk	13								Sample	s:	Grou	ndwater	Strikes:	In-Situ Te	ests:
Terminated in I Groundwater I Seepage noted	rater Notes:															B - Bulk D - Distu ES - Env Sample	urbed ironment		Grou Strike Restin Grou Level	าdwater เ าg ndwater	HSV - Har Vane Test PID - Pho Detector	nd Shear : to Ionisation Test
Uther Remark	oted from 1.25m 												etion.			BWB Cc Waterfr Station : Notting NG2 3D	onsulting I ont Hous Street ham Q	td We bw E:r @b P:C	b: bconsulti nottingha wbconsu )115 924	ng.com m ılting.com 1100		

AL PIT LOG				S	Scale: 1:	25		Sheet 1 of 1
ON ID: Project Name: Lake	view Drive, Bicester						2.20	
Project Number: NTE2	2366			0	60		oncio	0
Client: Slade	en Estates Ltd			0.			IEIISIOI	Degrees
e: TP Plant: JCB 3CX	<b>Start &amp; End Date:</b> 15/08/2017		St	tability	y: Uns	table fr	om grou	und level to 1.4m
Level (m AOD): 64.73	<b>Eastings &amp; Northings:</b> 457666E 221424N		En	igineei	r: LC		Che	cker: RPD
vater	Strata		Sa	mples	S		In-S	itu Tests
Backfill AOD) ess	Description	Legend (m bgl)	Type Fr	rom (m)	To (m)	Туре	(m)	Result
Lilm bel after Dimins 1.1 m bel 1.0 m betails 1.1 m bel 1.0 m bel after dimensional dimensi	Prevention         Ver brown slightly clayey gravelly fine and medium ith frequent rootlets. Gravel is fine to coarse to sub-angular quartzite, flint and limestone.         Image: hyperbolic clayer gravelly fine and solve angular quartzite, flint and limestone with occasional flint and quartzite.         Image: hyperbolic clayer gravelly fine gravelly fine and quartzite.         Image: hyperbolic clayer gravelly fine gravelly fine gravelly fine gravelly fine gravelly fine and quartzite.         Image: hyperbolic clayer gravelly fine graveli fine gravelly fine gravelly fine gravelly		ES ES ES	0.10 0.40 1.00	0.20 0.50 1.10 1.60		(m)	
for Termination: ed in hard ground vater Notes: Igress noted from 1.1m emarks: actory or visual evidence of contamin	Remarks nation noted. 2. Backfilled with arising's upon completion.		iamples: 3 - Bulk 2 - Disturb 5 - Envirou iample WB Consi Vaterfron	oed onmental sulting Lt. It House reet	Groun	Legel dwater S Groun - Restin, Groun _ Level	nd trikes: dwater g dwater	In-Situ Tests: HSV - Hand Shear Vane Test PID - Photo Ionisation Detector Test
vater Notes: Igress noted from 1.1m Emarks: actory or visual evidence of contamir	nation noted. 2. Backfilled with arising's upon completion.	E E S V S N N N	) ia 3'' 1 1 1	- Distant 3 - Enviro ample WB Cons Vaterfror tation Str ottingha (G2 3DQ	- Disturbed 5 - Environmental ample WB Consulting Lt Aterfront House tation Street ottingham IG2 3DQ	- Disturbed 5 - Environmental ample WB Consulting Ltd Atterfront House tation Street ottingham G2 3DQ P: 01	- Disturbed 5 - Environmental ample WB Consulting Ltd /aterfront House tation Street ottingham /G2 3DQ P: 0115 9241	- Disturbed 5 - Environmental ample WB Consulting Ltd /aterfront House tation Street oftingham G2 3DQ - Disturbed Strike Resting Groundwater Level Web: bwbconsulting.com E: nottingham @bwbconsulting.com P: 0115 9241100

TRIAL I	PIT	LC	G		_												Scale: 1	.:25		Sł	neet 1 of 1
LOCATION ID	): Prc	oject N	lame	: Lak	kevi	iew Driv	ve, Bice	ester											2.20		
тр107	Pro	ject N	lumb	per: NTE	E23	366										ſ	75	in +: ח			45
	Clie	ent:		Slac	ider	n Estate	es Ltd									~	./ 5		IEnsie.	15 (11)	Degrees
Hole Type: TP	Pla	nt: J	CB 30	CX	S	itart &	End Da	ite:	16/	/08/201	17					Stabilit	iy: Ve	ry unst	table tr	om 0.8m	<u>n</u>
Ground Lever	(m A	OD):	64.	.74	Ŀ	astings	3 & Nor	rthings:	45,	7737E z	21431IN					inginee	r: LC	<del></del>	Che	cker: к	PD
Groundwater Strike	1.61	Level (m	Thickn					Strata					1	Depth	<b>*</b>	Sample	<b>:S</b>		In-Si	itu Tests	
Strike <sub>Details</sub> b	Jacktiii	AOD)	ess	Grass (	OVE	or greyi	ich brov	Descrip wn sligh	ption	vellv fin	SAND.		Legenu	1 (m bgl)	Туре	From (m)	To (m)	Туре	(m)	Kes	sult
		ł	0.30m	Gravel	is f 	fine to	coarse	sub-ang	gular w	vith occ	asional	shells.		*   *	ES	0.10	0.20				
		64.44		(Topsoi Brown	oil) n to	orangi	ish brov	wn sligh	ntly clav	vey grav	velly fine	and		0.30							
		l	0.50m	mediur	um S	SAND. (	Gravel i	is fine to	o coars	se sub-a	Ingular				ES	0.50	0.60				
		l	0.5011	(Alluviı	ium	1)	3101141 .	Ources	10 0.7					اللہ ا مراجع							
		63.94		Grev st		dv grav		ND of fi	ne to c	oarse a	ngular t			0.80	В	0.80	1.10				
		l		rounde	led	mixed I	litholog	gy's.		.00.02	inguize :	0		}   ↓↓							
1.1m		l		(River 1	Ter 2.3	Trace De	eposits omes orç	) ganish bro	own.												
1.10m bgl		l													В	1.20	1.50				
after 20mins		l																			
		l	1.55m																		
		l																			
		l																			
		l												.⊢   .↓							
		l												-}   -} -}							
		62.39 62.34	0.05m	Dark gi	grey	v extrer	mely st	rong LIN	MESTO	NE (no i											
				(Cornb	bras	sh Form	nation)	erminatec	1 at 2.40	m hal.		/	1								
		l						Innacc	al 2.70	lli byi.											
		l																			
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	-+		$\left  \right $	<u> </u>														<u> </u>			
				<u> </u>	—		Remarl	ks										Lege	nd	<u> </u>	
Reason for Terr	minati	on:													Samples	s:	Grour	idwater S	<b>strikes:</b>	In-Situ Test	ts:
Terminated in na	ard gr	ound													B - Buik D - Distu ES - Env	urbed vironment	al 🖂	7 Strike Restir	idWater	HSV - Hanu Vane Test PID - Phote	l Shear
Groundwater in Steady inflow re	lotes: ecorde	ed from	n 1.1m	n										I	Sample	Tonne		Groun Level	s Idwater	Detector Te	est
Other Remarks	s:				—												HA We			T	
1. No olfactory (	or visı	ial evic	lence	of contam	mina	ation no	)ted. 2. E	Backfillec	d with a	arising's ı	upon com	pletion.		I	Waterfr Station	ont House Street	e bwł E:r	נ: consultir ottinghaי	ng.com m	RV	VR
														I	Nottingh NG2 3D	nam iQ	@b <sup>,</sup> P: C	wbconsul 115 924:	lting.com 1100		
														I	1					INFRAME OF C.	It   BUILDING.

TRIAL I	PIT	LO	G								Scale: 1	.:25		Sheet 1 c	of 1
LOCATION ID	): Pro	ject N	lame	Lakeview Drive	e, Bicester								2.00		
	Pro	ject N	lumb	er: NTE2366						C				45	
11 100	, Clie	ent:		Sladen Estates	Ltd					0	).60		iension	Degre	es
Hole Type: TP	Pla	nt: J	CB 30	< Start & Er	nd Date:	16/08/2017				Stabili	ty: Re	main s	table t	hroughout	
Ground Level	(m A0	DD):	65.	19 Eastings 8	& Northings:	457751E 221471N			[	Enginee	er: LC	<del>,                                     </del>	Che	cker: RPD	
Groundwater					Strata		<u> </u>		<u> </u>	Sample	25	<u> </u>	In-S	itu Tests	
Strike Details	3ackfill	Level (m AOD)	ess	<u> </u>	Descriptio	on	Legen	d <sup>Depth</sup> (m bgl)	Туре	From (m)	) To (m)	Туре	Depth (m)	Result	
			0.30m	Grass over greyish Gravel is fine to co (Topsoil)	oarse sub-angu	lar with occasional shells									
		65.19	0.40m	Firm orangish brow sub-angular to sub Occasional rootlet (Alluvium)	wn slightly san b-rounded, lime t to 0.6m.	dy CLAY. Gravel is fine and estone and flint.			D	0.30	0.40				
		64.79	0.40m	Stiff grey slightly g coarse sand lenses and occasional qu (Alluvium)	ravelly CLAY w s. Gravel is fine artzite.	ith occasional pockets of sub-angular limestone			D	0.80	0.90				
		64.39 64.04	0.35m	Orange slightly gra and coarse angula (Alluvium)	avelly fine to co Ir to sub-angula	barse SAND. Gravel is fine ar limestone and flint.		1.10							
			1.00m	Stiff grey with occ Gravel is fine and (Weathered Kellav	asional brown medium sub-ai ways Clay Men	speckling gravelly CLAY. ngular mudstone. nber)			D	1.50	1.60				
2.5m bgl 2.50m bgl after 20mins		63.04 62.99	0.05m	Dark grey weather gravel with low to shell fragments no (Cornbrash Forma F	red LIMESTONE moderate cob oted. (tion) fole Terminated at	E arising as slightly sandy ble content. Occasional t 2.50m bgl.		2.45 -2.50 							
					<u> </u>				<u> </u>			Ļ	Ļ		
Reason for Terr Terminated in h Groundwater N Slight seepage I Other Remarks	mination nard gro Notes: noted f	pn: ound from 2	5m			Sample: B - Bulk D - Distu ES - Env Sample BWB Cc	s: urbed ironmenta	Grour al	Groun Groun Strike Restin Grour Level b:	trikes: idwater g idwater	In-Situ Tests: HSV - Hand Shear Vane Test PID - Photo Ionisati Detector Test	ion			
1. No olfactory	or visu	al evic	lence	r contamination note	d. 2. Backfilled w	vith arising's upon completic	n.		Waterfr Station Notting NG2 3D	ont House Street ham Q	e bwł E: n @b P: C	oconsultir ottinghar wbconsul )115 9241	ng.com n lting.com L100		3 AENT NGS

TRIAL P	I T I	.0	G													Scale: 1	:25			Sheet 1 of 1
LOCATION ID:	Proje	ct N	ame	Lake	eview [	Drive, Bi	icester											2.00		
TD100	Proje	ct N	umb	er: NTE	2366										0				()	225
11103	Client	t:		Slad	len Esta	ates Ltd									C	).65	PIT DIN	nensio	ns (m)	Degrees
Hole Type: TP	Plant	: J(	CB 3C	X	Start	& End [	Date:		16/08/2	2017					Stabili	ty: Un	stable be	tween gr	ound leve	l and 1.0m
Ground Level (	m AOD	<b>)</b> :	66.	25	Eastir	ngs & N	orthing	gs:	457753	3E 2215	35N				Engine	er: LC		Che	cker:	RPD
Groundwater							Strat	ta						:	Sample	es		In-S	itu Test	:s
Strike <sup>Strike</sup> Ba	ckfill A	vel (m .OD)	Thickn ess				Des	scription	ı			Legen	d <sup>Depth</sup> (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	F	esult
	65	5.90	0.35m	Grass o Gravel i (Topsoi	over gre is fine 1 I)	eyish broto coars	own sli se sub-a	ightly ( angula	gravelly ar with o	fine SA	ND. nal shells.		0.35	в	0.40	0.50				
	65	5.25	0.65m	angular (Alluviu	r limest	tone.								ES	0.40	0.90				
			0.75m	Firm gro fragme (Weath	ey mot nts. iered K	tled bro	own CL /s Clay	AY wit	th occas	sional sł	nell			D	1.10	1.20				
	64.50 64.50 64.50 0.65m 0.65m 0.65m 0.05m 0.05m 0.05m 0.05m 0.05m 0.05m 0.05m 0.05m 0.05m								LAY. Gra Occasior ber)	avel is fi nal coar	ne and se sand		1.75	D	1.80	1.90				
	63.85 63.80 63.85 63.80 0.05m Cark grey weathered LIM gravel with low to mode fine shell fragments note (Cornbrash Formation) Hole Ten								arising ; le conte	as sligh ent. Occ I.	tly sandy casional		2.40 2.45 - - - - - - - - - - - - -							
						Pore-	rka										1000			
Reason for Term Terminated in ha Groundwater No No groundwater	Remarks         on for Termination:         inated in hard ground         ndwater Notes:         roundwater encountered         r Remarks:													Sample B - Bulk D - Distr ES - Env Sample	s: urbed ironmenta	Groun	Groun Strike Restin Groun Level	itu Strikes: ndwater ng ndwater	In-Situ Te HSV - Ha Vane Tes PID - Pho Detector	<b>ests:</b> nd Shear t ito Ionisation Test
1. No olfactory o	er Remarks: o olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.											BWB Co Waterfr Station Notting NG2 3D	onsulting I ont Hous Street ham Q	Ltd We bw E:r @b P:C	b: bconsulti ottingha wbconsu )115 924	ng.com n lting.com L100		AND Y   ENVIRONMENT TURE   BUILDINGS		

TRIAL	ΡΙΤ	. TC	)G														Scale: 1	:25		Sheet 1 of 1
LOCATION I	D: Pr	oject N	lame	: Lak	keviev	v Drive,	Biceste	er											2.00	
TD11	h Pr	oject I	lumb	er: NTI	E236	õ														( ) 45
		ent:		Sla	aden E	states l	td									C	).65	Pit Din	nensio	ns (m) Degree
Hole Type: TP	Pla	ant: J	CB 30	X	Sta	rt & En	d Date:	:	16/08	8/2017						Stabili <sup>.</sup>	ty: Re	main s	table t	hroughout
Ground Leve	el (m A	OD):	65.	.39	Eas	tings &	North	ings:	4578	08E 22	1487N				E	Ingine	er: LC		Che	cker: RPD
Groundwater							St	rata								Sample	es		In-S	itu Tests
Strike Details	Backfill	Level (m AOD)	Thickn ess	-				Descripti	ion				Legend	Depth (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	Result
		65.04	0.35m	Grass of is fine quartz (Topso Brown	over s light zite ar pil) nish or	slightly coarse id occas range sl	clayey angulai sional l lightly g	slightly r light s imesto gravelly	y gravel sub-rou one. y fine Sa	ly fine s inded f AND. G	SAND. Gr lint, ravel is fi	avel		0.35	В	0.40	0.70			
		64.54	0.50m	and mo and lin (Alluvin Stiff gr	nediur mesto ium) rey oc	n sub-a ne. casiona	ngular	to sub	-rounde	ed flint,	, quartzit	e velly		- - - - - - - - - - - - - - - - - - -						
			1.35m	CLAY. G	Grave ium)	l is fine	and m	edium	sub-an	igular li	mestone	-			D	1.00	1.10			
2.15m bgl 2.15m		63.19		Firm d	Jark g	rey grav	velly CL	AY. Gra	avel is fi	ine and	I medium	1		2.20	D	2 30	2 40			
bgl after 20mins		63.54	0.65m	sub-an (Weath 2.75m -	ngular herec <u>- 2.85</u> r	n: Fine si	one. /ays Cla hell fragr	ay Mer <u>ment</u> s ar	mber) nd seleni	ite crysta	als noted.									
		62.49	0.05m	Dark g gravel (Cornb	grey w l with brash	reather low to r Format Ho	ed LIM modera ion) ole Term	ESTON ate cob	E arisin oble cor at 2.90m I	ıg as sli <sub>i</sub> ntent. <sup>bgl.</sup>	ghtly san	dy		- 2.85 - 2.90 - - - - - - - -						
														- - - -						
						Rer	narks											Leve	nd	
Reason for Te Terminated in Groundwater Slow ingress n	rminat hard g Notes oted fr	ion: round : rom 2.1	5m												Sample: B - Bulk D - Distu ES - Env Sample	<b>s:</b> urbed ironment;	Groun	Groun Groun Strike Restir Groun Level	Strikes: Indwater Ing Indwater	In-Situ Tests: HSV - Hand Shear Vane Test PID - Photo lonisation Detector Test
Other Remark	<b>(s:</b> y or vis	ual evid	dence	of contan	minatio	on notec	d. 2. Bac	kfilled v	with aris	ing's up	on comple	etion.			BWB Co Waterfr Station Notting NG2 3D	onsulting I ont Hous Street ham Q	Ltd We bw E:r @b P:C	b: bconsulti lottingha wbconsu 115 924	ng.com m Iting.com 1100	

TRIAL I	PIT	LC	G											Scale: 1	:25		Sheet 1 of 1
LOCATION ID	): Pro	oject N	lame	: Lak	eview Driv	e, Bicester										2.10	
TD111	Pro	ject N	lumb	er: NT	E2366								0			ancia	315
	Clie	ent:		Slad	den Estates	s Ltd							U	.05		Terisio	Degrees
Hole Type: TP	Pla	nt: J	CB 30	X	Start & E	nd Date:	1	.6/08/201	.7				Stabili	ty: Slig	htly unst	able bet	ween 1.2m and 1.65m
Ground Level	(m A	OD):	64.	.60	Eastings	& Northing	<b>gs:</b> 4	57817E 2	21449N			E	Enginee	er: LC		Che	cker: RPD
Groundwater			1	[		Strata	a						Sample	es		In-S	itu Tests
Strike Details E	Backfill	Level (m AOD)	Thickn ess			Desc	cription			Legen	d (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	Result
1.2m bgl 1.20m bgl after 20mins		64.35 63.85 63.60 62.95 62.35	0.25m 0.50m 0.25m 0.65m	Grass c is fine and oc (Topso Brown SAND. limesto (Alluvin Soft gr fine an quartzi (Alluvin Orange and mo and flin (River ) Firm di mediuu (Weath Dark gi gravel (Cornb	over slightl to coarse a ccasional lir ish orange Gravel is fi one, quartz um) rey and ora and medium ite numerc um) e occasiona edium ang nt. Sand is Terrace De ark grey sli m sub-ang hered Kella rey weathe with low to orash Form	y clayey slig ingular to su mestone. slightly grav ne and mec zite, flint with ange slightly angular to bus flint with ally grey SAI ular to sub- fine and me posits) ghtly gravel ular mudsto ways Clay f ered LIMEST o moderate ation) Hole Terminat	shtly gr ub-rou velly cl dium an ith occas gravel sub-ro h occas ND anc rounde edium. Ily CLA' one. Membe ted at 2.:	avelly find nded flint ayey fine ngular to asional sh ly sandy C unded lim sional she d GRAVEL. ed quartzi Y. Gravel i: er) rising as s e content. 25m bgl.	e SAND. Gravel , quartzite and medium sub-rounded ell fragments. CLAY. Gravel is hestone, Il fragments. Gravel is fine te, limestone s fine and		0.25	ES D	0.40	0.50			
											1						
			<u> </u>		R	emarks								<u> </u>	Lege	nd	I
Reason for Terr Terminated in h Groundwater N Steady inflow n	minati hard gr Notes: oted f	on: ound rom 1.	2m									Sample: B - Bulk D - Distu ES - Env Sample	<b>s:</b> urbed ironmenta	Grour	Grour Grour Strike Restir Grour Level	<b>Strikes:</b> ndwater ng ndwater	In-Situ Tests: HSV - Hand Shear Vane Test PID - Photo Ionisation Detector Test
Other Remarks 1. No olfactory	<b>::</b> or visu	ial evic	lence	of contam	nination not	ed. 2. Backfill	lled with	n arising's u	upon completior			BWB Co Waterfr Station S Notting NG2 3D	onsulting L ont House Street ham Q	td We bwl E: n @b P: C	b: oconsulti ottingha wbconsu 115 924:	ng.com m lting.com 1100	

TRIAL	PIT	<sup>-</sup> LC	)G													Scale: 1	.:25		ç	Sheet 1 of 1
LOCATION	ID: Pr	oject N	Vame	: Lal	keview D	)rive, Bi	icester											2.10		
<b>TP11</b>	<b>7</b> Pr	oject N	lumb	er: NT	E2366										ſ		Dit Din		nc (m)	0
		ient:		Sla	den Esta	ates Ltd									0					Degrees
Hole Type: TP	Pla	ant: J	CB 30	CX	Start 8	& End [	Date:		16/08/2	2017					Stabili	ty: Un	stable b	etween	1.05m ar	nd 1.45m
Ground Leve	el (m A	\OD):	64	.68	Eastin	igs & N	orthing	gs:	457905	E 22148	83N			E	Enginee	er: LC		Che	cker:	RPD
Groundwater				<del></del>			Strat	ta						:	Sample	25	<u> </u>	In-S	itu Test	S
Strike Details	Backfil	Level (m AOD)	. Thickn ess		<u>.</u>		Des	scriptior	n			Legend	I Depth (m bgl)	Туре	From (m)	) To (m)	Туре	Depth (m)	R	esult
1.15m bgl 1.15m bgl after 20mins		64.43 63.63 63.23 62.23	0.25m	Grass is fine and oc (Topsc Firm o sandy mediu Occasi (Alluvi Yellow Gravel quartz (River Stiff da is fine (Weat	over slig to coars :casiona iil) irange of CLAY wi im sub-a ional poo ium) is fine t :ite. Sand Terrace ark grey and men hered Ke	htly cla e angu l limest ccasion th occa ingular ckets of vn to gr o coars d is fine Deposi gravell dium su ellaway	ayey sli ilar to s tone. nally broasional to sub- f fine a reyish I se sub- e and m its) ly becolub-ang /s Clay	ghtly g sub-ro ownisi rootle -round angula nediur gular m Memi	gravelly f unded fl h orange ets. Grave Jed flint edium sa i SAND a ar to sub m. very grav udstone ber) iTONE (n 2.50m bgl.	fine SAN int, qua e slightly el is fine and lim ind. rounde rounde 	ND. Gravel artzite y gravelly e and nestone. AVEL. ed AY. Gravel		245 0.25 	ES	0.40	0.50				
													<u>†</u>							
	<u> </u>	<u> </u>		<u> </u>		Rema	arks						<u> </u>	<u> </u>	<u> </u>	<u> </u>	Lege	nd	<u> </u>	
Reason for Te Terminated in Groundwater Slow ingress r Other Remark 1. No olfactor	Remarks Remarks Remarks Remarks Remarks Remarks Remarks: Ifactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completic													Sample: B - Bulk D - Distu ES - Env Sample BWB Cc Waterfr	s: urbed 'ironmenta onsulting I ront Hous	Grour al	Grour Strike Restin Grour Level b: bconsulti	itrikes: Idwater Ig Idwater ndwater	In-Situ Te HSV - Har Vane Test PID - Pho Detector	ists: Ind Shear to Ionisation Test
	, 5, 113			sontal			. 24000		2.19116					Station Notting NG2 3D	Street ham )Q	E: n @b P: C	ottinghar wbconsu )115 9241	n lting.com 1100		Y   ENVIRONMENT TURE   BUILDINGS

TRIAL P	IT LC	)G										Scale: 1	.:25		Sheet	1 of 1
LOCATION ID:	Project	Name	: Lak	eview Drive,	Bicester									2.10		
TP113	Project	Numb	er: NTE	2366							C	. 00		oncio	as (m)	180
	Client:		Slad	den Estates L	td						U		r it Din		De	grees
Hole Type: TP	Plant:	ICB 30	X	Start & En	d Date:	16/08/2017					Stabili	ty: Un	stable	oetwee	n 1.1m and 1	1.7m
Ground Level (I	m AOD):	64.	.51	Eastings &	Northings:	458046E 221	.396N			E	Engine	er: LC		Che	cker: RPD	
Groundwater	Level (n	Thickn			Strata				Depth	-	Sample	es		In-S Depth	itu Tests	
Strike <sub>Details</sub> Bac	ckfill <sub>AOD)</sub>	ess	Grass o	over slightly	Descript	tion	AND, Gravel	Legend	(m bgl)	Туре	From (m)	To (m)	Туре	(m)	Result	
<ul> <li>1.1m bgl 1.10m bgl after 20mins</li> <li>1.5m bgl 1.50m bgl after 20mins</li> </ul>	64.26 63.26 62.81	0.25m 1.00m 0.45m 0.80m	Grass c is fine t and oc (Topsoi Firm lig gravell' angula (Alluvit 0.75m - Orange fine to Sand is (River - Firm da to sub- (Weath 2.3m - 2 Stiff da mediuu (Weath	over slightly to coarse an casional lime il) ght grey occa y CLAY with r quartzite a um) -1.25m: Becom e occasionall coarse sub- 5 fine and me Terrace Depo ark grey sligl -angular and nered Kellaw	clayey slightl gular to sub- estone. asionally bro- occasional rc nd limestone <u>nes soft, brown</u> y light grey S angular limes edium. osits) ntly gravelly Clay s stiff. gravelly CLA ar mudstone rays Clay Me	y gravelly fine S rounded flint, q wn slightly sand ootlets. Gravel is e. Frequent shel mottled grey. AND and GRAV stone, quartzite CLAY. Gravel is fine ents. mber) Y. Gravel is fine mber)	AND. Gravel Juartzite ly slightly s fine sub- ll fragments. EL. Gravel is and flint. ine angular and									
Reason for Termi Terminated in har Groundwater No Seepage noted fi Other Remarks:	60.76 60.71 ination: rd ground otes: rom 1.1, st	0.05m	Dark gu gravel ( (Cornb	rey weather with low to l rash Format He Manual Second	ed LIMESTON moderate co ion) ole Terminated a <b>marks</b>	IE arising as slig bble content. at 3.80m bgl.	htly sandy		3.75 	Sample: B - Bulk D - Distt ES - Env Sample BWB Cc	s: s: nsulting b	Groun al Ltd Wee	Lege ndwater S Grour Strike Restin Grour Level	nd itrikes: idwater g idwater	In-Situ Tests: HSV - Hand She Vane Test PID - Photo Ion Detector Test	ar
1. No olfactory or excavated to asse	r visual evi ess ground	dence condit	of contam tions only.	ination noted	l. 2. Backfilled	with arising's upc	on completion.	3. Trial p	bit	Waterfr Station Notting NG2 3D	ont Hous Street ham Q	e bwl E: r @b P: C	bconsultii iottinghai wbconsu 0115 9241	ng.com n Iting.com 1100	CONSULTANCY   ENVI INFRASTRUCTURE   BU	

TRIAL	PIT	LO	G												Scale: 1	:25		S	Sheet 1 of 1
LOCATION I	D: Pro	oject N	lame	: Lake	eview D	rive, Bic	ester										2.20		
TD112	1 Pro	oject N	lumb	er: NTE	2366									0	75		oncio	ac (m)	270
	Cli	ent:		Slad	len Esta	ates Ltd								U	./5		lensio	15 (11)	Degrees
Hole Type: TP	Pla	nt: J	CB 30	CX	Start	& End Da	ate:	15/08	8/2017					Stabili	ty: Uns	table be	tween gr	ound level	and 1.65m
Ground Leve	el (m A	OD):	64.	.62	Eastin	gs & No	rthings:	45810	06E 2214	05N			E	Inginee	er: LC		Che	cker:	RPD
Groundwater							Strata							Sample	es		In-S	itu Test	5
Strike Details	Backfill	Level (m AOD)	l hickn ess				Descrip	tion			Legend	Depth (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	Re	esult
		64.32	0.30m	Gravel Gravel occasio (Topsoi Firm br gravelly sub-rou fragme (Alluviu 0.6m - 0	is fine t onal she own m cown m cLAY. unded f nts. un) <u>2.7m: Bar</u>	o coarse ells. ottled ar Gravel is lint and	and orange fine and quartzite	e slightly I medium with oc	y sandy sli y sandy sli n sub-ang ccasional s	ightly ular to shell		0.30	ES ES D	0.10	0.20				
1.35m bgl 1.35m bgl after		63.62	0.65m	Light br fine and sub-rou (River T	rown to d mediu unded r Ferrace	o orangis um. Grav nixed litl Deposits	h yellow vel is fine hology's. s)	SAND and to coars	nd GRAVE se sub-an	EL. Sand is gular to			ES B	1.00	1.20 1.50				
20mins		62.97 62.67 61.07	0.30m	Soft da fine and more g (Weath Stiff da (Weath	rk grey d medii ravelly iered Kr rk grey iered Kr	slightly s um sub-a with dep ellaways CLAY. ellaways	sandy slig angular w oth. Clay Me Clay Me	ghtly gra veak mu ember) ember) at 3.55m t	bgl.	Y. Gravel is secomes			B	2.00	2.10				
Reason for Te Sufficient dept Groundwater	Remarks       n for Termination:       ent depth reached       Idwater Notes:       idwater encountered at 1.35m													s:	Grour	Lege Idwater S Grour Strike Restir	nd trikes: dwater	In-Situ Te HSV - Har Vane Test PID - Phot	sts: Id Shear to Ionisation
Groundwater Other Remark 1. No olfactory	Iwater Notes:         water encountered at 1.35m         Remarks:         Ifactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.													onsulting L ont House Street ham Q	td We bwh E: n @b P: 0	Grour Level	dwater ng.com n ting.com 100		

TRI	AL I	PIT	LC	)G		S	icale: 1	:25		Sheet 1 of 1
LOCA		): Pro	oject N	lame	Lakeview Drive, Bicester	_			2.10	
ТР	115	Pro	oject N	lumb	r: NTE2366		60	Dit Dim	onsior	180 180
••	±±0	Clie	ent:		Sladen Estates Ltd				ension	Degrees
Hole Ty	pe: TP	Pla	nt: J	CB 30	Start & End Date:         17/08/2017	Stability	/: Re	main st	able t	hroughout
Groun	d Level	(m A	OD):	64.	54 Eastings & Northings: 458088E 221485N	Engineer	r: LC		Che	cker: RPD
Ground	lwater				Strata	Samples	5		In-Si	itu Tests
Strike	Strike Details E	Backfill	Level (m AOD)	Thickn ess	Description Legend (m bel)	Type From (m)	To (m)	Туре	Depth (m)	Result
			64.34	0.30m	Grass over greyish brown slightly gravelly fine SAND. Gravel is fine to coarse sub-angular with occasional shells. (Topsoil)					
			64.14	0.20m	gravelly sandy CLAY. Gravel is fine and medium sub-angular					
			63.80	0.25m	Rare shell fragments.					
			03.89		Orange SAND and GRAVEL. Gravel is fine to coarse sub- angular limestone. Sand is fine and medium.					
					Stiff grey occasionally mottled brown very slightly gravelly         CLAY with frequent relic rootlets. Gravel is fine sub-angular         mudstone, limestone and flint. Occasional fine shells.         (Weathered Kellaways Clay Member)					
				1.60m						
			62.29	0.55m	Stiff dark grey gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)					
▼	3m bgl 3.00m bgl after 20mins		61.74 61.64	0.10m	Dark grey weathered LIMESTONE arising as slightly sandy gravel with low to moderate cobble content. (Cornbrash Formation) Hole Terminated at 3.00m bgl.					
					Remarks			Legen	d	
Reason Termina Ground Seepag	ated in h dwater N e noted	minati hard gr Notes: from 3	on: ound 3.0m		San B - I D - ES - San	<b>mples:</b> - Bulk - Disturbed - Environmental mple	Groun	Ground Strike Resting Ground Level	<b>rikes:</b> Iwater Iwater	In-Situ Tests: HSV - Hand Shear Vane Test PID - Photo Ionisation Detector Test
Other I 1. No o excavat	Remarks Ifactory ed to as	r or visu sess g	ual evid round	dence condit	f contamination noted. 2. Backfilled with arising's upon completion. 3. Trial pit ons only. Not NG:	VB Consulting Ltd aterfront House ation Street ottingham 52 3DQ	d Web bwb E: n @bv P: 0	o: oconsulting ottingham wbconsult 115 92411	g.com ing.com LOO	CONSULTANCY   ENVIRONMENT INFRASTRUCTURE   BUILDINGS

TRIAL P	PIT LO	DG										Scale: 1	:25		S	heet 1 of 1
LOCATION ID:	Project	Name	e: Lake	eview Drive, Bice	ester									2.30		
TD116	Project	Numb	oer: NTE	2366							0		D.1 D.			270
1110	Client:		Slad	en Estates Ltd							0	0.60	PIT DIM	nensio	ns (m)	Degrees
Hole Type: TP	Plant:	JCB 30	CX	Start & End Da	ite:	15/08/2017					Stabili	ty: Re	main s	table t	hrough	out
Ground Level (	m AOD):	64	.63	Eastings & Nor	rthings:	458142E 221462	2N			E	Enginee	er: LC		Che	cker: I	RPD
Groundwater	- 1		1		Strata						Sample	es		In-S	itu Tests	5
Strike <sup>Strike</sup> Ba	ckfill Level ( AOD)	m Thickn ess	1		Description	n		Legend	Depth (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	Re	esult
	64.38	0.25m	Grass o rootlets (Topsoil	ver brown slight s throughout. I)	tly clayey f	ine SAND with fre	equent		0.25							
		0.55m	CLAY. O (Alluviu 0.45m -	ccasional shell f im) 0.8m: Becomes ligh	ragments.	ght brown.	tiy sanuy									
	63.83 63.83 63.63 63.63 63.63 0.20m 0.															
	63.13 63.13 63.13 63.14 63.13 63.13 Firm dark grey CLAY with frequent relic roots and organic matter. (Alluvium) Matter. (Alluvium) Matter. (Alluvium) Matter. (Alluvium) Matter. (Alluvium) Matter. (Alluvium) Matter. (Alluvium) Matter. (Alluvium) Matter. (Alluvium)															
		1.30m						ale" = " ale" = " ale								
	01.85	0.50m	Stiff dar mudsto (Weath	rk grey very grav ne. ered Kellaways	velly CLAY. Clay Mem	Gravel is fine to c ber)	coarse		-							
	61.33			Hole Te	erminated at a	3.30m bgl.		<u>*</u> * * * * - * - * - * - * - * - * - * * - * * - * * - * * - * * - *	- 3.30 							
									-							
																_
	1	1	•	Remark	s						1		Lege	nd	1	
Reason for Term Sufficient depth Groundwater No No groundwater	ination: reached otes: encounte	red								Sample: B - Bulk D - Distu ES - Env Sample	<b>s:</b> urbed ironmenta	Groun	Grour Grour Strike Restin Grour Level	o <b>trikes:</b> ndwater ng ndwater	In-Situ Te HSV - Han Vane Test PID - Phot Detector T	<b>its:</b> d Shear .o Ionisation Test
Other Remarks: 1. No olfactory o	r visual ev	idence	of contam	ination noted. 2. E	Backfilled wi	ith arising's upon co	ompletion.			BWB Co Waterfr Station Notting NG2 3D	onsulting L ont House Street ham Q	td We bwl E:r @b P:C	b: oconsultii ottinghai wbconsu 1115 9241	ng.com n Iting.com L100	BN	NB '   ENVIRONMENT JRE   BUILDINGS

TRIAL P	PIT LC	)G													Scale: 1	:25		Sheet 1 of 1
LOCATION ID:	Project	Name	: Lake	eview	Drive,	Bicest	er										1.90	
TP117	Project	Numb	er: NTE	E2366										0	65	Dit Din	nensio	os (m) 0
	Client:		Slad	den Es	tates L	td								0	.05	rit Din	1011310	Degree
Hole Type: TP	Plant:	JCB 30	CX	Star	t & End	d Date	:	17/08	8/2017					Stabili	ty: Re	main s	table t	hroughout
Ground Level (	m AOD):	65	.09	East	ings &	North	ings:	45819	96E 221	571N				Enginee	er: LC		Che	cker: RPD
Groundwater	Level (r	n Thickn				St	rata					_ Depth	Ture	Sample	es	Tura	In-S Depth	
Strike Details Ba		ess	Grass o	over b	rown s	lightly	clavev	/ gravelly	, fine ar	nd medium	Legen	a <sub>(m bgl)</sub>	Type	From (m)	10 (m)	Type	(m)	Result
	64.84 64.49 63.94 63.24	0.25m 0.35m 0.55m 0.70m	SAND v angular (Topsoi Soft bro Gravel limesto (Alluviu Browni coarse (River T Stiff da occasio sub-ang (Weath Stiff da sub-ang (Weath	with fin r to qu il) owniss is fine one ar um) ish ora sub-a Terrac ark gree gular nered	h oran ange S/ ngular e Depo y mott elic roo limesto Kellaw	e, flint ge slig arse su rtzite. AND ar limest bited bro bits and one an rays Cl elly CL one. rays Cl	htly gr htly gr htly gr htly gr htly ang htly ang https: http	dy CLAY. Ided, ine to medium.		0.25	ES B ES	0.40	0.50					
2.5m bgl after 20mins	62.54	0.15m	Dark gr gravel v (Cornbi	eathere ow to r format Ho	ed LIM moder ion) ble Term	htly sandy		2.40										
Reason for Term	ination.				Rer	narks							Sample	c.	Grou	Lege	nd	In-Situ Tecte
Sufficient depth Groundwater No Groundwater en Other Remarks: 1. No olfactory o	reached otes: countered	at 2.5r dence	n of contam	ninatio	n noted	l. 2. Bad	ckfilled	with arisi	ing's upo	n completior	1.		B - Bulk D - Distu ES - Env Sample BWB Cc Waterfr Station	J. urbed ironmenta onsulting L ont House Street ham	td We bwi E: r @bw	Groun Strike Restir Groun Level b: b: b: b: b: b: b: b: b: b: b: b: b:	ndwater ndwater ndwater ng.com lting.com	HSV - Hand Shear Vane Test PID - Photo Ionisation Detector Test
													NG2 3D	Q	P: C	115 924	1100	CONSULTANCY   ENVIRONMENT INFRASTRUCTURE   BUILDING

TRIAL	ΡΙ٦	۲ LC	)G															Scale: 1	:25			Sheet 1 of 1
LOCATION	ID: Pr	oject I	Name	:	Lakev	view Dri	ve, Bic	ester												2.10		
TD11		oject I	Numb	er:	NTE2	366																0
		ient:		2	Slade	n Estate	es Ltd										U	0.60		iensio	ns (m)	Degrees
Hole Type: TP	Pl	ant:	ICB 30	CX	:	Start &	End Da	ate:		17/08/	/2017						Stabili	ty: Re	main s	table t	hrough	iout
Ground Lev	el (m /	AOD):	65	.42		Easting	s & No	orthing	gs:	45810	5E 221	556N				E	Engine	er: LC		Che	cker:	RPD
Groundwater		1		1				Strat	ta								Sample	es		In-S	itu Test	ts
Strike Details	Backfil	AOD)	n Thickn ess					Des	scriptior	n	<i>c</i> :			Legend	d <sup>Depth</sup> (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	F	(esult
2.85m bgl after 20mins 2.95m bgl	285m     225m     225m							nd mediu coarse ional flint. ntly grave ckets of f angular ONE arisi ent.	ım		0.25	ES D D B B	0.40 0.70 0.80 1.40 2.30 2.85	0.50 0.80 0.90 1.50 2.00 2.80 3.00	Lege	nd						
Reason for Te Terminated ir Groundwater Groundwater	Remarks for Termination: ted in hard ground water Notes: water encountered at 2.95m, rising to 2.85m after 20 minutes															Sample: B - Bulk D - Distu ES - Env Sample	s: urbed ironmenta	Groun	Grour Grour Strike Restir Grour Level	<b>Strikes:</b> Indwater	In-Situ T HSV - Ha Vane Tes PID - Pho Detector	ests: nd Shear t oto Ionisation • Test
Other Remar 1. No olfactor	er encountered at 2.95m, rising to 2.85m after 20 minutes arks: ory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.														BWB Cc Waterfr Station Notting NG2 3D	onsulting l ont Hous Street ham Q	Ltd We e bwl E: r @b P: C	b: bconsulti lottingha wbconsu 115 924:	ng.com n Iting.com L100	CONSULTANC		

TRIAL P	IT L	0	G						Scale: 1	:25		Sheet 1 of 1
LOCATION ID:	Projec	t N	ame:	Lakeview Drive, Bicester							2.00	
TD110	Projec	t N	umb	er: NTE2366				0	c 0			180
	Client			Sladen Estates Ltd				0	.60	PIL DIM	Tensio	Degrees
Hole Type: TP	Plant:	J	CB 3C	X Start & End Date: 17/08/2017				Stabilit	ty: Re	main s	table t	hroughout
Ground Level (	m AOD	):	66.	11 Eastings & Northings: 458141E 221618N			E	Inginee	er: LC	1	Che	cker: RPD
Groundwater				Strata			9	Sample	s		In-S	itu Tests
Strike Details Ba	ackfill AC	:l (m :D)	Thickn ess	Description	Legend	Depth (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	Result
	65	36	0.25m	Grass over brown slightly clayey gravelly fine and medium SAND with frequent rootlets. Gravel is fine to coarse angular to quartzite, flint and limestone. (Topsoil) Firm orangish brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse angular to sub-rounded flint and limestone. (Alluvium) Stiff greyish brown mottled brown slightly gravelly CLAY with occasional pockets of fine and medium sand. Gravel is fine and medium angular to sub-rounded flint, sandstone, quartzite and limestone. (Weathered Kellaways Clay Member) 1.1m - 2.4m: Becomes firm.		0.75	ES ES D	0.30 0.80 0.90	0.40 0.90 1.00			
	63	71	1.65m				D	1.80	1.90			
	62	16	1.55m	Stiff dark grey very gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)			D	2.50	2.60			
	62.	11	<u>0.05m</u>	Extremely strong dark grey weathered LIMESTONE arising as a slightly sandy gravel with low to moderate cobble content. (Cornbrash Formation)		4.00 - - - -						
				Hole ferminated at 4.00m bgf.								
				Remarks					-	Lege	nd	
Reason for Term Terminated in ha Groundwater No No groundwater	ard grour otes: encount	nd :ere	d				Samples B - Bulk D - Distu ES - Envi Sample	<b>s:</b> urbed ironmenta	Grour	Grour Grour Strike Restir Grour Level	<b>Strikes:</b> Indwater Ing Indwater	In-Situ Tests: HSV - Hand Shear Vane Test PID - Photo Ionisation Detector Test
Other Remarks: 1. No olfactory o	or visual e	evid	ence	of contamination noted. 2. Backfilled with arising's upon completion.			BWB Co Waterfr Station S Nottingl NG2 3D	onsulting L ont House Street ham Q	td We bwl E:n @b P:0	b: oconsulti ottinghai wbconsu 1115 924:	ng.com m Iting.com 1100	BWB CONSULTANCY   ENVIRONMENT INFRASTRUCTURE   BUILDINGS

TRIAL	PIT	LC	G														Scale: 1	.:25		5	Sheet 1 of 1
LOCATION I	D: Pr	oject N	lame	: Lake	eview l	Drive, l	Bicest	er											2.00		
TD120	) Pr	oject N	lumb	er: NTE	2366											0				m.c. (mc)	180
	Cli	ent:		Slad	len Est	ates Lt	td									U	0.60	PIL DIN	nensio	ns (m)	Degrees
Hole Type: TP	Pla	ant: J	CB 3C	CX	Start	& End	Date	:	17/	/08/201	17					Stabili	ty: Re	main s	table t	hrough	out
Ground Leve	l (m A	OD):	66.	.45	Easti	ngs & I	North	nings:	458	8070E 2	221668	N			E	Inginee	er: LC		Che	cker:	RPD
Groundwater							St	trata							9	Sample	es		In-S	itu Test	s
Strike Details	Backfill	Level (m AOD)	Thickn ess					Descript	tion				Legen	d (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	R	esult
		66.15 65.25	0.30m	Grass o SAND w angular (Topsoi Orange Gravel i quartzit (River T Firm da fine and	ver briver briver briver briver vith free r to qu l) : slight is fine te and ferrace ark gree d sub-a	own sl equent artzite ly claye to coa limest e Depo y grave angula	elly CL r mud	Avelly find	y grave ravel i mesto ine an to sub th occ	elly fine is fine t one. nd med b-round coround	e and m to coars lium SA ded flint l relic ro onal qui	ND. t, pootlets. artzite			ES	0.60	0.70				
		64.55	0.70m	Stiff dan (Weath Stiff dan mediun (Weath	rk grey n sub- iered k	cellawa v very į angula cellawa	gravel ar muc	lay Me lly CLA dstone lay Me	Y. Graves	) vel is fi	ne and				В	2.00	2.30				
3m bgl 3.00m bgl after 20mins		63.50 63.45	0.05m	Extrem as a slig (Cornbr	ely str ghtly sa rash Fo	ong da andy g ormatio Hol	ark gre ravel v on) le Term	ey wea with lo	athere ow col	ed LIME bble co m bgl.	STONE ontent.	arising		2.95 3.00 							
Reason for To	minat	ion:		-		Rem	narks						•		Same !:			Lege	nd	In 64	octor
Terminated in Groundwater Seepage noted Other Remark	hard g Notes: d from	3.0m	lonce	of contact	instia	noted	2 8	ckfilled	with a	ricingle		molotion			B - Bulk D - Distu ES - Envi Sample	nsulting L	al Srout	Groun Strike Restir Groun Level	ndwater ng ndwater	HSV - Hai Vane Test PID - Pho Detector	rots: nd Shear t to lonisation Test
1. No olfactory	/ or vis	uai evio	ience	ot contam	lination	noted.	. 2. Bac	скпШеd	with a	irising's	upon co	mpletion.			Waterfro Station S Notting NG2 3D	ont House Street nam Q	e bwl E:r @b P:C	bconsulti lottingha wbconsu 115 924:	ng.com m Iting.com 1100		AB CY   ENVIRONMENT TURE   BUILDINGS

TRIAL	Pľ	T LC	)G												Scale: 1	:25		S	iheet 1 of 1
LOCATION	ID: P	roject N	Name	: Lake	eview Dri <sup>,</sup>	ve, Bices	ter										2.10		
TD12	1 P	roject N	Numb	er: NTE	2366													( )	]
1 - 1 2	T c	lient:		Slac	len Estate	es Ltd								0	.60	Pit Dim	iensior	ns (m)	Degrees
Hole Type: TP	Р	lant: J	CB 30	CX	Start &	End Date	e:	15/08/2	2017					Stabilit	ty: Re	main s	table t	hrough	out
Ground Lev	vel (m	AOD):	65	.25	Eastings	& Nortl	hings:	458039	E 221518	N			E	Inginee	er: LC		Che	cker:	RPD
Groundwate	r					S	trata						9	Sample	es		In-S	itu Test	s
Strike Strike Details	Backf	ill Level (m AOD)	Thickn ess	I			Descriptio	on			Legen	d Depth (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	Re	esult
		64.95	0.30m	Grass o SAND v angulai (Topsoi Firm or	over brow vith frequ r quartzite I) range slig	n slightly ient root e, flint ai htly sanc	y clayey tlets. Gra nd limes dy slightl	gravelly f avel is fin tone. y gravelly	fine and m le to coars y CLAY wit	nedium se th		0.30	ES ES	0.10	0.20				
		64.60	0.35m	occasio to sub- (Alluviu Firm br pockets	onal rooth rounded um) rownish g s of medi	ets. Grav quartzite rey sligh um and o	vel is fine e and lim tly grave coarse sa	e and meen nestone. elly CLAY y and. Occa	dium sub- with occa asional sh	-angular Isional Iells.		0.65	D	0.80	0.90				
		64.25 64.00	0.25m	Gravel (Alluviu Orange Fine to limesto	is fine and um) slightly c coarse an one.	udstone. edium SA nt, quartzi	ND. ite and		1.00										
		62.05	1.95m	(River 1 Stiff gre pockets fragme mudsto (Weath 1.9m - 3	Ferrace Dr ey to dark s of medi nts. Grav one. hered Kell 2.2m: Becor	eposits) grey slig um and d el is fine aways <u>C</u> mes very g	ghtly gra coarse sa and me <u>Clay M</u> en <u>gravelly</u> .	hvelly CLA and. Occa dium sub nber)	W with oc asional sh p-angular	arising			D	2.00	2.10				
3.30m bgl 3.30m bgl after 20min:	5	61.85	0.20m	as a slig (Cornb	ghtly sand rash Forn	dy gravel nation) Hole Terr	with low	w cobble	content.										
	1		í.		I	Remarks					1	1		1	1	Lege	nd	1	
Reason for T Terminated i Groundwate Slow ingress Other Rema	ermina n hard r Note of wate rks:	ation: ground s: er noted	from	3.3m						Samples B - Bulk D - Distu ES - Envi Sample BWB Co	s: ironmenta onsulting L	Grour	Grour Grour Strike Restin Grour Level b:	i <b>trikes:</b> ndwater ig ndwater	In-Situ Te HSV - Han Vane Test PID - Phot Detector	sts: Id Shear :o Ionisation Test			
1. No olfacto	ry or v	isual evid	dence	of contam	ination no	ted. 2. Ba	ackfilled w	vith arising	g's upon co	ompletion.			Waterfr Station S Notting NG2 3D	ont House Street ham Q	e bwl E: n @b P: C	oconsultir ottinghar wbconsu 1115 9241	าg.com ท lting.com 1100		Y   ENVIRONMENT URE   BUILDINGS

TRIAL P	'IT LC	)G										Scale: 1	.:25		Sł	neet 1 of 1
LOCATION ID:	Project I	Vame	: Lak	eview Drive,	Bicester									2.20		
TD122	Project I	Numb	er: NTE	2366							C				~~ (m)	180
11 166	Client:		Slac	Jen Estates Lt	td						U	.05			15 (11)	Degrees
Hole Type: TP	Plant: J	CB 3C	CX	Start & End	J Date:	16/08/20	)17				Stabilit	ty: Re	main s	table t	hrougho	ut
Ground Level (r	m AOD):	66.	.46	Eastings &	Northings:	457939E	221581N			E	inginee	er: LC	<del></del>	Cheo	cker: R	(PD
Groundwater	Lavel (n	Thiske	<del></del>		Strata					9	Sample	!S	<b> </b>	In-Si	itu Tests	
Strike Details Bac	ckfill AOD)	Thickness			Descript	tion		Legend	) (m bgl)	Туре	From (m)	To (m)	Туре	Deptri (m)	Res	sult
	66.16	0.30m	Grass o SAND v angular (Topsoi Stiff mc (Alluviu 0.75m -	ver brown si vith frequent r to quartzite l) ottled brown Jm) <u>1.45m: Lenses</u>	lightly clayey t rootlets. G 2, flint and lin CLAY with c	y gravelly fin ravel is fine mestone. Occasional re	elic rootlets.			ES	0.50	0.60				
	65.01	1.40m	Firm gr gravelly mudstc (Weath	ey occasiona / CLAY. Grave >ne. Iered Kellawa 3.55m: Become.	ally orangish el is fine and ays Clay Me <u>s stiff.</u>	ıtly sandy very ıb-angular			ES D	1.50	2.30					
	63.61	0.70m	Dark gr gravel ( (Kellaw	ey weathere of fine and m ays Clay Me	ed MUDSTON nedium mud ember)	NE arising as Istone.	s a very clayey			В	2.90	3.40				
	62.91 62.76	0.15m	Dark gr slightly (Cornb <sup>,</sup>	ey weathere gravelly COE rash Formati Ho	ed LIMESTON 3BLE of lime ion) Je Terminated	VE arising as stone. at 3.70m bgl.	slightly sandy		- - - - - - - - - - - - - - - - - - -	В	3.55	3.70				
		$\square$											·			
			<u> </u>	Ren	narks				<u> </u>				Lege	nd		
Reason for Termi Terminated in har Groundwater No No groundwater Other Remarks: 1. No olfactory o	ination: rd ground ytes: encounter r visual evi	ed dence	of contarr		I. 2. Backfilled		s upon completion.	 		Samples B - Bulk D - Distu ES - Envi Sample BWB Co Waterfr Station	ironmenta	Groun	dwater S Groun 7 Strike - Restin Grour Level b: b: b: b: b: b: b: b: b: b: b: b: b:	i <b>trikes:</b> idwater ig idwater idwater ng.com	In-Situ Test HSV - Hand Vane Test PID - Photo Detector Te	ts: I Shear I Ionisation est
										Notting NG2 3D	nam Q	@b <sup>,</sup> P: 0	wbconsul 115 9241	n lting.com 1100		I ENVIRONMENT RE   BUILDINGS

	PIT	LC	G														Scale: 1	:25		Shee	et 1 of 1
LOCATION ID	): Pro	oject N	lame	: Lak	eview Dr	rive, Bi	cester												2.20		
TD123	Pro	oject N	lumb	er: NTE	2366											c				a a (ma)	45
	Clie	ent:		Slac	den Estat	tes Ltd										Ĺ	0.65	PIT DIN	nensio	ns (m)	)egrees
Hole Type: TP	Pla	nt: J	CB 30	CX	Start &	k End D	Date:		16/08/	2017						Stabili	ty: Re	main s	table t	hroughout	t
Ground Level	(m A	OD):	66	.82	Easting	gs & No	orthing	gs:	457860	DE 221	.580N				E	Engine	er: LC		Che	cker: RP	D
Groundwater			1				Strat	a								Sample	es		In-S	itu Tests	
Strike Details B	Backfill	Level (m AOD)	Thickn ess				Des	criptior	۱				Legend	Depth (m bgl)	Туре	From (m	To (m)	Туре	Depth (m)	Resu	lt
		66.57	0.25m	Grass c SAND v angula (Topsoi Firm br gravelly rounde	over brov with freq r to quar il) rown bec y CLAY. G ed quartz	wn slig Juent r rtzite, f coming Gravel i zite an	shtly cla rootlets flint and g greyis is fine t d limes	ayey g s. Grav d lime sh bro so coa stone.	ravelly vel is fin estone. wn fror rse ang occasio	fine ar ne to c m 0.7n jular to onal ro	nd mediur oarse n slightly o sub- ootlets to	m		- 0.25	ES	0.50	0.60				
		65.72		0.5m. (Alluvit 0.75m -	um) <u>1.1m: Bec</u> ey mottle	comes s ed bro	stiff with f	fine she	ell fragme e sandy	ents not y CLAY	ted. with	* 		- 1.10	D ES	1.00	1.10				
		65.22	0.50m	mediur (Alluviu	n and co um) ark grev	with b	and len	nses.	nite we	atherii	ng slightly			- - - - - - - - - - - - - - - - - - -			1.00				
			1.10m	sandy g (Weath	gravelly ( ered Kel	CLAY. G Ilaway	Gravel is	s fine Meml	and me ber)	edium	mudstone	e. 400			D	1.70	1.80				
		04.12	0.70m	Dark gr gravellı (Kellaw	'ey weat y clay. Gr /ays Clay	hered ravels y Mem	MUDS <sup>-</sup> of fine a ber)	TONE and m	arising nedium	as a si muds	tiff very tone.			-	D	3.00	3.10				
		63.42 63.37	0.05m	Dark gr slightly (Weath	ey weat gravelly nered Co	hered COBB rnbras Hole	LIMEST BLE of lin sh Form Terminat	TONE mesto nation ted at 3	arising one. ) 3.45m bg	as slig I.	htly sandy	У 		- 3.40 - 3.45 - - - - - - - - - - - - - - - - - - -							
			<u> </u>			Rema	irks										<u> </u>	Lege	nd		
Reason for Terr Terminated in h Groundwater N No groundwate	Remarks ion for Termination: initiated in hard ground undwater Notes: groundwater encountered														Sample: B - Bulk D - Distu ES - Env Sample	<b>s:</b> urbed ironment	Grour	Grour Grour Strike Restir Grour Level	<b>Strikes:</b> ndwater ng ndwater	In-Situ Tests: HSV - Hand Sl Vane Test PID - Photo Ic Detector Test	hear onisation t
Other Remarks 1. No olfactory	temarks: Ifactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.														BWB Co Waterfr Station Notting NG2 3D	onsulting I ont Hous Street ham Q	td We bwl E: n @b P: C	b: oconsulti ottingha wbconsu 115 924:	ng.com n Iting.com L100		

TRIAL I	PIT	LO	G										Scale: 1	:25		Shr	eet 1 of 1
LOCATION ID	): Pro	ject N	lame	: Lake	eview Drive	, Bicester									2.20		
TD17/	Pro	ject N	lumb	er: NTE	2366							0				n a (ma)	0
	Clie	ent:		Slac	den Estates	Ltd						0	.05			ns (m)	Degrees
Hole Type: TP	Plai	nt: J	CB 3C	X	Start & En	d Date:	15/08/20	)17				Stabilit	ty: Sli	ghtly u	nstable	e below 1	1.0m.
Ground Level	(m A0	):	65.	.75	Eastings &	k Northings:	457746E	221645N			E	Inginee	er: LC		Che	cker: RI	PD
Groundwater			,			Strata					!	Sample	2S		In-S	itu Tests	
Strike Details	3ackfill	Level (m AOD)	Thickn ess	<u> </u>		Descript	tion		Legend	Depth (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	Res	ult
		65.50	0.25m 0.40m	Grass o SAND v angular (Topsoi Dark br frequer	wer brown s with frequer r to quartzit il) rown clayey nt rootlets.	slightly clayey nt rootlets. G te, flint and lin gravelly fine Gravel is fine	y gravelly fir ravel is fine mestone. and mediu to coarse a	ne and medium to coarse m SAND with angular to		0.25	ES	0.10	0.20				
Lange 1.1m	<ul> <li>45.10</li> <li>and the store is the stor</li></ul>												0.80				
1.10m bgl after 20mins			0.75m	Yellowi angulai angulai (Cornb	r limestone. r limestone. r limestone. rash Format												
		63.90			H	ole Terminated	at 1.85m bgl.										
					Po	marks					<u> </u>						
Reason for Terr Terminated in h Groundwater N Seepage noted Other Remarks 1. No olfactory	mination hard grow Votes: from 1 5: or visu	on: ound 1m	lence	of contarr	nination note	d. 2. Backfilled	with arising':	s upon completion	 		Samples B - Bulk D - Distu ES - Envi Sample BWB Cc Waterfr	s: urbed ironmenta onsulting L ront House	Groun	Grour Grour Strike Restin Grour Level b: bconsulti	itrikes: ndwater ng ndwater ng.com	In-Situ Test: HSV - Hand Vane Test PID - Photo Detector Te:	s: Shear Ionisation est
											Station S Notting NG2 3D	Street ham IQ	E: n @b <sup>,</sup> P: 0	ottinghar wbconsu 115 9241	n lting.com 1100		

TRIAL P	IT L	.0	G														Scale: 1	:25		4	Sheet 1 of 1
LOCATION ID:	Proje	ct Na	ame:	Lake	eview	/ Drive,	, Bicest	er											2.00		
TP125	Proje	ct N	umb	er: NTE	E2366	5										C	65	Dit Din	ooncio	nc (m)	0
11 123	Client	:		Slac	den E	states l	Ltd									C	.05				Degrees
Hole Type: TP	Plant:	: JC	CB 3C	X	Sta	rt & En	d Date	:	16/	/08/201	17					Stabili	ty: Re	main s	table t	hrough	out
Ground Level (	m AOD	):	66.	80	East	tings &	North	ings:	457	7817E 2	221604	N			E	Engine	er: LC		Che	cker:	RPD
Groundwater							St	rata								Sample	es		In-S	itu Test	S
Strike <sup>Strike</sup> Ba	ackfill AC	el (m DD)	Thickn ess					Descript	ion				Legen	d (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	R	esult
	66 66 65 64 64 63	1.35 - 1.00 - 1.95 -	0.25m 0.50m 1.50m	Grass c rootlet and occ (Topsoi Firm br rootlet sub-an; (Alluviu Brown sub-an; (Alluviu Stiff gre occasic (Alluviu 2.0m - 2 Stiff da 2.6m. C (Kellaw Extrem (Cornb	over s ss. Gra casio il) rown ss to ( ggular one. um) grave ggular um) ey oc onal f um) 2.45m: Grave vays ( Grave vays (	lightly avel is f nal qua slightly 0.5m. G to sub elly fine limest casiona ine and <i>Relic ro</i> ey grav I is fine Clay Mu Format H	clayey fine an artzite. y grave iravel is -round e to coa one. ally spe d mediu botlets no eelly CL e and n ember lark gre tion) ole Term	slightly d medi lly sand s fine a led flin arse SA eckled l um sar oted. AY bec nedium ) ey LIMI ninated a	y grav ium su dy CL/ and m MD. C brown d par	relly fin ub-ang AY with edium artzite, Gravel i n CLAY trings. g very g -angula NE (no i m bgl.	e SANI ular lin occasi sandst s fine t with gravelly r muds arising	D with nestone ional onal one and o coarse o coa		0.25 0.25 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.9	ES D D B	0.40 0.50 1.00 2.10 2.50	0.50 0.60 1.10 2.20 2.60				
Reason for Term Terminated in ha Groundwater No No groundwater Other Remarks: 1. No olfactory o	ination: ard groun otes: encoun	: nd tereo	d ence (	of contam	ninatic	Rei	marks	ckfilled	with a	rising's (	upon cc	mpletion.			Sample: B - Bulk D - Distt ES - Env Sample BWB Cct Waterfr	s: urbed ironment	Ground al	Lege dwater: Strike Restin Groun Level b: b:	nd Strikes: ndwater ng ndwater	In-Situ Te HSV - Hai Vane Test PID - Pho Detector	<b>ists:</b> nd Shear t to Ionisation Test
, -							_ 24	/		0.2	,	,			Station Notting NG2 3D	Street ham Q	E: r @b P: 0	wbconsu 115 924	m lting.com 1100		Y   ENVIRONMENT

TRIAL	PIT	LC	G												Scale: 1	:25		S	sheet 1 of 1
LOCATION IE	): Pro	ject N	lame	: Lake	eview Dri	ve, Bicest	er										2.00		
TD126	Pro	ject N	lumb	er: NTE	2366													( )	]
17120	Clie	ent:		Slad	len Estate	es Ltd								0	.65	Pit Dim	iensioi	ns (m)	Degrees
Hole Type: TP	Pla	nt: J	CB 3C	X	Start &	End Date	:	16/08/2	017					Stabili	ty: Re	main s	table t	hrough	out
Ground Leve	l (m A	OD):	66.	.95	Easting	s & North	nings:	457810	E 2216561	N			E	Inginee	er: LC		Che	cker:	RPD
Groundwater						St	trata						9	Sample	s		In-S	itu Test	S
Strike Details	Backfill	Level (m AOD)	Thickn ess				Descriptio	on			Legend	Depth (m bgl)	Туре	From (m)	To (m)	Туре	Depth (m)	R	esult
		AOD) 66.65 66.30 64.95 64.55 64.50	ess 0.30m 0.35m 1.35m 0.40m 0.05m	Grass o with fre angular (Topsoi Firm br sandy C rounde Rare sh (Made 0.3m - 0 drain. 0.55m - Stiff gre occasio (Alluviu) Firm da sub-ang (Weath Extrem (Cornbr	ver brow equent ro r to sub-a l) own occa CLAY. Gra- d, sandst ell fragm <u>Ground)</u> 1.55m: Coa <u>0.65m: 100</u> ey mottle mal sand im) ark grey g gular mu- ered Kell ely stron rash Form	rn slightly potlets th ingular fli asionally vel is fine cone and eents. <u>Travelly Cl</u> d orange lenses. (aways Cl g dark green nation) Hole Term	clayey s roughou int and s mottled and me limestor ular grave and drain n and wh LAY. Grav ey LIMES ninated at	slightly gr ut. Gravel candstone grey slig edium suk ne. Occas el noted to k noted. ite sandy vel is fine hber) STONE (n 2.45m bgl.	and med	ND coarse e brick. elly to sub- tlets. a land h		2.40 2.40 2.40 2.40 	ES ES D B	0.10 0.40 0.70 0.80 1.00	0.20 0.50 0.80 0.90 1.50		(m)		
												-							
						Remarks										Lege	nd		
Reason for Ter	minati	on:											Sample	s:	Grour	dwater S	trikes:	In-Situ Te	sts:
Terminated in I	nard gr	ound											B - Bulk D - Distu	urbed	$\nabla$	Groun 7 Strike	dwater	HSV - Har Vane Test	ıd Shear
Groundwater I No groundwate	Notes: er encc	ountere	ed										ES - Envi Sample	ironmenta		- Restin Groun Level	g dwater	PID - Phot Detector	:o Ionisation Test
Other Remarks 1. No olfactory	s: or visu	ial evic	dence	of contam	ination nc	oted. 2. Ba	ckfilled w	ith arising	's upon cor	mpletion.			BWB Co Waterfr Station S Nottingl NG2 3D	onsulting L ont House Street ham Q	td Wel bwb E: n @b P: 0	o: consultir ottinghar wbconsul 115 9241	ng.com n lting.com 100	BN	



APPENDIX 3 DRILLERS' LOGS

	Name	Rig Type								From	Casing Red	Servi	Rig S	Remarks:													5.00	)	2.10		0,90	96	(mbgl)	Depth	Job Ref:	(	ר ה
The ah	NBinna	Dando				_				To Description	fluced from	ce Pit up to 1 ho	et Up up to 1 ho	(Standing time, daywork			Rorehole completed at (m)	6									glay		HICM		firm	grass			ME236		otro
nue are the driller'	X 1) Time off site	Time on Site									đ	a X	я Х	s, in situ testing, visitors etc.)			-										limestor		glay		orange/yr	over			Site Location:		ווא איז איז איז איז איז איז איז איז איז אי
r cita docarintiana and factual data only and are	6 PM	7,30 AM									at metres Time taken (dayworks)	Time taken over 1 hour (daywork	Time taken over 1 hour (daywork				Borehole continues							•			ne	L.	Clay		ay/brown sandy clay	tirm brown sandy clay		Strata Description	Bicester		DRILLING LOG
subject to amen	F	SPT/CPT U/UT	Sample							I		5	s	Dayworks Standing hours hours	-												57 320	26 300	RS 2:00 2	5 4 2.00 2	1 00-1 25	1080 28	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Test Type From (m)	client: BW	Те	Rig cre
dment after ch	ω	W B QS/C	quantities	Quantity (bags)	Well Materials Used		Well Diameter					3.10-3.20	And the first	From (m) to (m)													25/5 50/0	12 13/6	8	Ř -	1 1 54.	00	0.75 75-150	o(m)	B	Unit E2018, Warmco In 1: 01457 833910, Fax: 01457 83	v V
orking hu or u	Foreman's Signature	Foreman's Name		U -	Gravel Bento	5						60Min		18 Time (mins)													2	5 50/0		- 2	12		150-225 225-300	SPT	Day:	1dustry Park, Manchester Rc 33920, Email: info@geotron	Bthin
nder the cupe							Other N							Time Depth (m) Rate o		-								6				•		2 20 20	1 2 6		300-375 375-450 KP	NVak	thuisday	rad, Mossley, OLS 9AY; uk.co.uk, www.geotronuk.c	
nuicion of a							laterials Used (e.g						5	f Rise Vater St							_												A Piston blows	se or U100/ R	Date:	o.uk	B
n onninger or I	Engineer's Signature	Engineer's Name					lost cones/shoes etc.)						10 15 2	Rising to (mins)													1.0001	1.00 05		1.00 0	0.90 0		(%) Deputi (m) (i	tecovery Casing Wate	11/8/17	Sheet of	orehole Referen
reologist.			Well1										10	Total 3	ba	99	2	0}		)iai	Ve	(					1	6	enr	0. V	69		а (1	r level Liner size	Borel	Weather D	ICE BH 1
			Tag					ļ	1	_		-	121	M	5	1	24	1	4	1	1		1	1	1	1	1	P	air	1		1	stallation Details	00111	hole Diameter(s	2	P

er or	an enginee	supervision of a	y or under the	hecking b	C It after cl	iendmer	r ct to am	e subje	5 PM	are the driller's si	The above	Name N
Engineer's Signature			gnature	Foreman's S	L			=		Time off site	0000	V. V
Engineer's Name			Name	Foreman's	8 W	as/a	CPT U/UT	SPT/	7,20AM	Time on Site	hado	Rig Type
					ιx	nple quantitie	San	+				
				3	ntity (bags)	Quar						
			Boato	n 2M 10	M Scree	Plain	12-21					
aterials Used (e.g. lost cones/shoes etc.)	aterials Used (e	Other M		·	l Diameter	Well						
		$\vdash$										
		-										
		-									Description	From To
		-							at metres Time taken (dayworks)	t	om	Casing Reduced fr
			5	60%	-3.30	316		orks)	Time taken over 1 hour (daywo	×	up to 1 hour	Service Pit
5 10 15	5				a bud as the			orks)	Time taken over 1 hour (daywo	×	up to 1 hour	Rig Set Up
Water Strikes Rising to (mins)	Water	fimil Rate o	inst Time Death	ing Time for	Chiselli		orks Standing	Dayw		testing, visitors etc.)	g time, dayworks, in situ	Remarks: (Sandir
		-			-		-	$\vdash$	Borshole continues	3.30 M	completed at (m)	Ebrehol
											2	
		-										
		-	•									
								1				
		_							e	limeston	gray	3.00
000.1		+		0	25/6 50/		3.30	95		ġ		,
1.00 0		-		0	105 5/52	545	3.00	52	ay	iay ci	THE S	2.66 3.
1 1.00 6	-	7	234	2	- 2	2.45	1 2.00	54		and Ir c		
10000	03	6	1 2 2	1	1 1	1.45	\$ 1.00	53	In mother clau	hay / hay	im c	4 050
0.00						1.00	20.70	33	blown sandy clay	ier linn	rass or	62
a or U200/ Recovery Casing Wat A Piston blows (%) Depth (m) (	A Piston blows	450 N Valu	225-300 300-375 375-4	) 150-225	0-75 75-150	To (m)	ype From (m)	) Text	Strata Description			Depth (mbgl)
Date: 17/8/11	Date:	Sder	Day: Thur			22	a S	Clier	Bicester	Site Location:	E2366	Job Ref: NT
uk Sheet of	uk	5 9AY; geptronuk.co	nchester Road, Mossley, OL o@geotronuk.co.uk, www.g	Industry Park, Ma 833920, Email: inf	: E2018, Warmen 1 3910, Fax: 01457 8	Unit Tel: 01457 83	-	-				
Borehole Referen	200		AM	JBF	1	crew	Rig		DRILLINGLOG		÷))	ר ס ר
_			~ ~ ~	1	_			-				

PD020 14/07/2016

		Rig c	rew 7	JBYAN	>	<b>Borehole Reference</b>	RH 107
	DRILLING LOG		Unit E201B, Warmco I Tel: 01457 833910, Fax: 01457 8	ndustry Park, Manchester Roa 33920, Email: Info@geotronul	d, Mossley, OLS 9AY; .co.uk, www.geotronuk.co.uk	Sheet of	weather PRY
ob Ref: NTE 7366 Site Location:	Bicester	client: B	8	Day:	Netnesday Date	16/8/17	Borehole Diameter(s)
Depth (mbgl)	Strata Description	Test Type Fram (m)	Yo (m) 0-75 75-150	SPT 150-225 225-300 3	00-375 375-450 N Value or U100/ Pist	on Recovery Casing Depth Water level (%) (m) (m)	Uner size installation Details
GL grass over still	t brown sandy clay	B1 0.10	0.60				E
old stiff orange 16	nown sandy clay	53 100	1.45 2 1	1	2 2	0.30 014	IT IN
		SS 2.00	2.6 2 1	4 14	222	1-M OH	001
10 Stiff June 1001	UN CIALY	86 2.30	2.76			-	/ k
2.30 CIN aran ric	5	57 300	3.2025/5 50/			1.00 Pry	
		58 3.30	3.40 25/5 501			1.00 Dry	
200 Sray lime Sto	ne l						7
							1<1
	,						3ra T te
BH Cont: N Y/N Casing (depth m) · 1 /M	BH Complete (depth) · Z · D						01
	2						\$   +
(emarks: (Standing time, dayworks, in situ testing, visitors etc.)		Dayworks/Standing	Chisellin From (m) to (m)	g Time (mins)	Time Depth (m) Rate of Rise W	ater Strikes Rising to (mins)	intal a con L
Rig Set Up up to 1 hour	Time taken over 1 hour (dayworks)			, internet	UT	10 15 20	12.
Service Pit up to 1 hour	Time taken over 1 hour (dayworks)			60min			4
From To Description	tanana tanana antara atara		240-240				
					Oshor Masouile Heo	l (n ar last source (shour other)	
			Weil Oldinetei				[
			Plain Screer	Crawel Bento			0
			Quantity (bags)	1 4			
	-	Sam	ple quantities			Fundamenta Blance	WellTag
Rig Type Dando Time on Site	7.30 AM	SPT/CPT U/UT	D/SD B W	Foreman's Name		Engineer's Name	
Name W. Ginnall Time of site	SpM	F	F	Foreman's Signature		Engineer's Signature	
The above are the driller's s	ite descriptions and factual data only and are su	ibject to ame	ndment after che	cking by or unc	ler the supervision of	an engineer or geolog	vist.

PD020 14/07/2016

o.so him yellow/brown sandy gravely clay 1.20 still gray clay 5 250 gray Mu lime Stone JOB REF: NTE2.36 Depth (mbgl) Ceptron UK Casing Reduced from Rig Type emarks: (Standing time, dayworks, in situ testing, visitors etc.) From Name Service Pit Rig Set Up **BH Cont** grass NBinnall Ъ Dando NAN Description up to 1 hour up to 1 hour The above are the driller's site descriptions and factual data only and are subject to amendment after checking by or under the supervision of an engineer or geologist. Casing (depth m) - 23 over stiff brown sandy clay to Site Location: Time off site Time on Site BH Complete (depth) -Strata Description 2 Ricester 08 Prid DRILLING LOG metres 2.70m Time taken over 1 hour (dayworks Time taken over 1 hour (dayworks Time taken (dayworks) B1 0.10 0.40 B2 0.50 1.40 S3 1.00 1.45 B4 1.20 2.00 S5 2.00 2.45 S5 2.55 25 LS Client: SPT/CPT Test Type Dayworks/Standing £ 2.602.70 25/5 50/5 From (m) U/UT BWB Sample quantities To (m) D/SD 2-55-2.60 Unit E2018, Warmoo Industry Park, Manchester Road, Mossley, OLS 9AY; Tel: 01457 839910, Fax: 01457 833920, Email: Info@gendronuk.co.uk, www.geodronuk.co.uk Plain Well Materials Used Quantity (bags) Well Diameter From (m) to (m) 25/15/20/10 (M Screen 0-75 8 75-150 Chiselling N N ٤ NBTAM 150-225 225-300 300-375 375-450 Somin is v 3 W Gravel Bento Foreman's Name Time (mins) Day: Wednesday Date: x Time 250 Fust f 3 Depth (m) Rate of Rise Other Materials Used (e.g. lost cones/shoes etc.) 2 KPA N U100/ Piston blows Water Strikes Recovery (%) 6 Engineer's Signatur Rising to (mins) Engineer's Name 10  $\overline{\infty}$ 1.90 014 Casing Depth Water level (m) (m) 0.90 Dry 2.001.80 Sheet 15 ę, 1.80 BHiob Weather Ory Unor size Total Well Tag glavel bento Borehole Diameter(s) 3 IGOMM Installation Details 3 Plain Slotted m 1.5

**Rig crew** 

**Borehole Reference** 

PD020 14/07/2016

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אווייס איז	Time off stra	Rig Type SOC A A	-							From To Description	Casing Reduced from to	Service Pit up to 1 hour	Rig Set Up up to 1 hour	Remarks: (Standing time, dayworks, in situ testing, visitors etc.)		BH CONT N VIN Casing (depart m)- C 1-V	0.40 Firm orange/b 2.20 Firm gray g 3.40 gray limesto		Depth (mbgl)	Job Ref: NTE2366 Stee Location:		
site descriptions and factual data only and are.	1.12 - 11	7. 20 AM									at metres Time taken (dayworks)	Time taken over 1 hour (daywork	Time taken over 1 hour (daywork			au company	fown sandy clay	in has could in	Strata Description	Bieester		
ubject to amendment after checking by or under the supervision of an eng	A Foreman's Signature Engine	SPT/CPT U/UT D/SD B W Foreman's Name Engin	Sample quantities	Quantity (bags) S 2	Well Materials Used Graved Banto	Plain 1 Screen 2.5 to	Well Diameter Other Materials Used (e.g. lost					3.40-3.50 60 Mill	5 10	Dayworks/Standing Chiselling Water Strikes Water Strikes Rish			$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	R1 0.10 0.1.0	Test Type         From (m)         To (m)         0-75         75-150         150-225         225-300         300-375         375-450         KPA         Blows         (%)	client: QWB Day: TUESday Date: 151	Unit E2018, Warmco Industry Park, Manchester Read, Mossley, OLS 9AV; Tel: 01457 833910, Fax: 01457 833920, Email: Info@geotronuk.co.uk, www.geotronuk.co.uk	Rig crew NB+AM Borel
gineer or geolo	neer's Signature	ginaer's Name					st cones/shoes etc.)						) 15 20	rs Ing to (míns)		-			nry Casing Depth Water level (m) (m)	18/17	Sheet of	ehole Reference
vgist.			Well Tag				Ę	2	7	Z	.5		5	Total M	1		ed implain r avel 2 berto 2		Liner size Installation Details	Borehole Diameter(s	Weather Dry	BH 100

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The above are the driller's site descriptions and j	Nome W. BINNCII TIMe off site 6 PM	NETIDO DOLADO TIMO OS SEC. 7.30							From To Description	Casing Reduced from to at metres	Service Pit up to 1 hour	Rig Set Up up to thour	Remarks: (Standing time, dayworks, in situ testing, visitors etc.)		BH Cont N Y/N Casing (depth m) - 2 T 1 BH Complete (depth) - 5 -				1746	Linestone	avot Stontal hold and	have grave crack	D.(n 0. 1)		Orta FILM BOWN /gray Mott		Clay	le juss over him blow		Depth Strata Description	LOD REF: NTEZZL SITE LOCATION: RILESTET		DRILL
rctual data only and are subject to amendment after c	4 3	1 M SPT/CPT U/UT D/SD 8	Sample quantities	Quantity (bags)	Well Materials Use	Plain ( Sc	Well Diameter			Time taken (dayworks)	Time taken over 1 hour (dayworks)	Time taken over 1 hour (dayworks)	Dayworks/Standing Chi	-									57 3.20 25/0 50	56 3.00 300 25	en clary BS 2.50 3.00	Sur 2:00 2:45 1 2	53 100 145 1	~ Sand 4 B2 0.40 100	B 1 0.0 0.44	TestType From (m) To (m) 0.75 75	client: BWB	Unit E2019, Wam Tel: 01457 839310, Fau: 014	NG LOG Rig crew
checking by or under the supervision of an engined	annstiffes sustained	W Foreman's Name Engineer's Na		4 2	ed Gravel Bento	men 2 " SPt Shino di	Other Materials Used (e.g. lost cones				60MM	Time (mins) Time vepun (m) reasonate 5 10	iselling Water Strikes	and the second se									1/5			223411	1 1 2 2 2 7 0			SPT         N Value of U100/ Pitton Recovery Casin           1-150         150-225         225-300         300-375         375-450         KPA         blows         (%)         (	Day: THESOLOGY Date: 15/8	mco industry Park, Manchester Road, Mossley, OLS 9AY; 457 833920, Email: Info@geotronuk.co.uk, www.gnotronuk.co.uk	CLT FTY Borenole
er or geologist.		lame	Well Tag		ri ugeg	concept [	;/shoes etc.)			4	6	15 20 100		91	a ]	ve	21	1					2	. b	er	-0 P/9 8.	80 0(4) 08.	J	577	Ing Depth Water level Liner size (m) (m) (m) Liner size Installation Details	P / 1 / Borenoie Diameter(s)	set of Weather DFY	Reference IS MININS

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The above are th	Neme N. BINNWI)	METYPS DOMON							From To Description	Casing Reduced from to 1	Service Pit up to 1 hour	Rig Set Up up to 1 hour	Remarks: (Standing time, dayworks, in situ testing, visitor		BH Cont N Y/N Casing (depth m) -									2.00 gray Mudsto		1.70 film orenge	Clay	GL Glass Over		Depth (mbel)	Job Ref: NTE 2366 Site Lo		
he driller's site descriptions and factual data only and are	eoffste GPM	a, 45-AM								at metres Time taken (dayworks)	//№ Time taken over 1 hour (daywor	/ N Time taken over 1 hour (daywor	ns etc.)		2 M BH Complete (depth) · 2.1									No.		brown Mottled Clay	-	LILL DOMU SHIPS DIGNEY	I'm han and a la	Strata Description	ocation: Bicester		DRIIIINGIOG
subject to amendment after cl	2	SPT/CPT U/UT D/SD B V	Sample quantities	Quantity (bags)	Well Materials Used	Plain Scr	Well Diameter				s) 2N-2.101	(5)	Dayworks/Standing Chise	-											105/1/2 55	5 14 2.00 25/55 59	B3 1.70 2.00	52 1.00 1.45 S q	B1 0.200.70	Test Type From (m) To (m) 0.75 751	client: BWB	Unit E2018, Warme Tel: 01457 833910, Fax: 0145	Rig crew
necking by or under the supervision	Foreman's Signature	V Foreman's Name		3 1	Gravel Bento	to to	Other Material			Gonin			lling Time (mins) Time   Depth (m)   Rate of Rise												8			6 4 2 2 14		SPT Viewer U10 150-225 225-300 300-375 375-450 KPA 1	Day: Mordery	o Industry Park, Manchester Roed, Mossley, OLS 9AY; 7 839920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk	NB TAM
n of an engineer or geolog	Engineer s signature	Logineer's Name	To obtain the Blance				is Used (e.g. lost cones/shoes etc.)					5 10 15 20	Water Strikes Rising to (mins)															610080		30/ Piston Recovery Cosing Depth Water level to blows (%) (m) (m)	Date: 14/8/17	Sheet of W	Borehole Reference
ist.			Well Tag							7			3	ba	29	S Tete	<	»ł	9	1a	1	el	I	0.5	be 5 P	:17 ?1a	n n	Å	]	Liner size Instaliation Details	ISOMW	veather dry	31104

		Dit room ADL ANN	Rorahole Reference	_
Ceotron UK	DRILLING LOG	Unit E2018, Warmoo Industry Park, Manchester Road, Mossley, OLS SAY; Tel: 01457 833910, Fax: 01457 833920, Email: Info@gedtronuk.co.uk, www.geotronuk.co.uk	Sheet of	Neather D (
10b Ref: NTE236 Site Location:	Ricester	client: BWB Day: MOAday Date:	L1/8/11	
Depth (mbgl)	Strata Description	Test Type         From (m)         To (m)         From (m)         To (m)         SPT         N Value ave 205-300         N Value ave 300-375         N Value ave 315-450         N Value ave 87A         Bioms	Recovery Casing Depth Water level (%) [m] [m]	Liner size
GL grass over brow	in clay	31 0.10 0.70 16 6 6 9 29	6.80 08.0	
0.10 weathend stady	Store	5 3 2.00743 25 50/43 5 15 15 20/65	1.80 pry	
2-10 gray Mudstone				
BH Cont N V/N Casing (depth m)- 2.M	BH Complete (depth) - 3 M			
Remarks: (Standing time, dayworks, in situ testing, visitors etc.)		Dayworks/Standing Chiselling Wi	er Strikes Rising to (mins)	Total
Rig Set Up up to 1 hour	Time taken over 1 hour (dayworks	From (m) to (m)	10 15 20	
Service Pit up to 1 hour	Time taken over 1 hour (dayworks	080 3HE 250 taut -	1.00	
Casing Reduced from to To Description	at metres lime taken (uayworks)			
NOB 129 8 60	suprend to ste			
Chin Rom OSC	- 3,00 Aue	Cheer Materials Lieu	(e.g. lost cones/shoes etc.)	
To herd	Strata	Plain M Screen 2 M to	leigi mar contra anna chui	
		Quantity (bags) 1 1 7		
4		Sample quantities		
Rig Type Oando Time on Site	a.HSAN	SPT/CPT U/UT D/SD B W Foreman's Name	Engineer's Name	
Name N. B. NOC 11 Time off site	Spm	3     Foreman's signature	Engineer's Signature	
The above are the driller's s	site descriptions and factual data only and are s	ubject to amendment after checking by or under the supervision of	in engineer or geolo	gist.

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	's Signature	Engineer	Foreman's signature	2	7	1.Y.	200	Ianyo r	L
	er's Name	Enginet	Foreman's Name	0/30 B W	SPIT/SPE U/UN	54.5	Time off site	1	ne /
WellTag				ole quantities	Samp		fime on Site	2	
/		p.*	N - Contraction	Quantity (bags)					
$\langle \rangle$		¢	2.5 101	Viell Materials Head					11
	ones/shoes etc.)	Other Materials Used (e.g. lost co	63	Well Diameter					
1									
<u> </u>					is,		instail		
								To Description	om
			- 3 2	1.1		at metres Time taken (dayworks)	to	ced from	ng Reduc
	15 20	5 10		7 41		Time taken over 1 hour (dayworks)	/	Pit up to 1 hour	Service
₽	rto (mins) Tot	ne Dupth (m) Rate of Rise Rising	Time (mins) Ti	From (m) to (m)	hours hours	Time taken area to be a start of a second start of a	~	Up up to 1 hour	Rig Set I
<u> </u>		Water Strikes		Chise和ng	Dayworks Standing		in situ testing, visitors etc.)	tanding time, dayworks,	larks: (St
									-
						Borehole continues		orahole completed at (m)	Bc
<u>-      </u>									
								• •	Ń
							i har	nujsio	1
			So	2.53725	57/ 2.5	not snall should	start y	わらう	
		160 /		2.1	LINO 2-			dar1	
	2			2.	22	en send snevel	Y Lishi Ja	TCILON	r
		57	13 15 1	1-1-1-1-3	5711-	nown server snewly 2	verner &	chert	ŕ
er size Installation Details	ery Cesting Water-invel Un Depth (m) (m) Un	00.3/25 375-050 KKPA Pision blows (%)	150-225 225-300 3	s) To (m) 0.75 75-150	TestType From (m)				fideeut
Borehole Diametar(s)	418/17	men Date: 16	Day:		Client:	Strata Description	20	NAK LOG	Depth
ather	Sheet of We	rd, Massley, OIS 9AY; k.co.uk, www.geotronuk.co.uk	annustry Perk, Menchester Ro 33920, Email: Info@geotronu	Tel: 01457 833910, Fax: 01457 8		0 1010	Site Location:	120071	b Ref:
101	ehole Reference	culturn Bon	Sin h		9M	DRILLING LOG			

ine above are the arilier's site descriptions and factual data only and are	Nem Culture Shapland 18:00	1/ondo 2500/1 09115	Pla Tune On Ste							14:00 Isiao Fill water Bowser	rioni 10 Description	From To Description at metres Time taken (dayworks)	Casing Reduced from The taken over 1 hour (daywork	Service Pit us to how Time taken over 1 hour (dayword	Riz Set Ub	Remarks: (Standing time, dayworks, in situ testing, visitors etc.)		Borehole completed at (m) 4.00 Borehole continues										ing man much scene.	2.00 from share and change	0.6 light Brown yellow sundy cluy soft	or mad crovin		Depth Imbell Strata Description	Job Ref: NTE 2366 Site Location: Bicester		Ceotron UK DRILLING LOG
a only and are subject i	4	SPT/CPT				14		<u></u>				taken (dayworks)	en over 1 hour (dayworks)	en over 1 hour (dayworks)		Dayworks							SPT	D	SPT	a	507	0	15	LdS LdS	2		Teat Ture	Client		G
o amendment after c	1 4	U/UT D/SD B V	Sample quantities	Quantity (bags)	Well Materials Used	Plain Scr		Well Diameter					2m to 4m		From (m) to (m)	/Standing Chi						-	4.0 628 4 .	3.464.00	3.063.45 5	2.20 3.00	2.20 2.50 4 1	1.451.90	1.902.20	1.2 165 1	0.0 1.2	0-75		800	Unit E2018, Wa Tel: 01457 833910, Fax: (	Kig crew
hecking by or unde	Foreman's Signature	V Foreman's Name	4		d Gravel Bento	een to							3M		Time (mins) Ti	selling				_			2 No cars		5 10 10 1		2 10 40			4661		75-150 150-225 225-300 3	spi	Day:	armoo industry Park, Manchester Ros 01457 833920, Email: info@geotronu	CS FOM
er the supervision o	N.	Um Sigker						Other Materials L							ime Depth (m) Rate of Rise									- 0	N 05 02 0		50 N			0 12 34 n		100-375 375-450 KPA	Control	vondera	ad, Mossley, OLS 9AY; ik.co.uk, www.geotronuk.co.uk	
of an engineer or geo	Engineer's Signature	Engineer's Name					oseo (e.g. iost cones/snoes etc.)	ised (e.e. Inst remee/shoes at )						5 10 15 20	Rising to (mins)	Water Strikes						S	0	1	14 2 3		1A 2 /			11100 1 /		blows (%) (m) (	1102180141	Date: In I co /ow in	Sheet of	Borehole Refere
logist.			Well Tag												Total																	(m) Liner size Installation Details		Borehole Diameter(	2 Weather Cloudie	nce GHI03

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Ceptron UK	Bicester Strate Description	Client: 13 (	E C E	rew         unit Exots, W           Tel: 01457 8339310, Fear           S           To (m)           0-75	Tew         CS         Jwanso         Industry Park, Mancha           Tal: 01457 833930, Fau: 01457 833920, Email: Inflo@p         Day         String         Day           S         String         String         Day         String         Day           To (m)         0-75         75-190         150-225         225-3	rew         CS         + Omega           Unit E2018. Warmoo Industry Fark, Marchaster Road, Mossiley, OLS 9AY           Tel: 01457 8393/0. Fanal: info@gentronud.co.ul, www.gentro           S         Day:         T U CS CC           S         SPT         To (m)         0.75         75-150         150-225         225-300         300-375         375-450	rew         CS         + Jow           Unit EO21B. Warmoo industry Park. Manchaster Raad. Morsiley, OLS SAY;           Tel: 01457 8393/0. Fault: Class?         Day:         Tue Solution and Loo uit.         Day:         Day:         Date:         Date:         Date:         Date:         Date:         Date:         Str         To (m)         0.75         75:190         150-225         225-300         300-375         375-450         More or Using/ Patan         Bons:
Install From Barn To	8:45 = 45 min install		0.75	75-150 150-225 225-3	00 300-375 375-450	KPA blows	(%)
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4.00							_
arks: (Standing time, dayworks, in situ testing, visitors etc.)		Dayworks/Standing	9	selling		Water	trikes
lig Set Up up to 1 hour	Time taken over 1 hour (dayworks	s	From (m) to (m)	Time (mins)	Time Depth (m) R	ste of Rise	Rising to (mins)
Reduced from to	at metres Time taken over 1 hour (dayworks)	<u>s</u>					
m To Description		1_1					
			Well Diameter		Oth	r Materials Used (e.	. lost cones/sho
			Plain Sc Well Materials Use	d Gravel Bonto	Imoter	Scotted	MWS (
Time on Sile		Sar	mple quantities		- 5 2 2 2	entro	
elando 2500/1	07:52	SPT/CPT U/UT	D/SD B	Foreman's Name	120		Engineer's Name
		-		Foreman's Signature	~ ~ ~ ~ ~		ingineer's Signatur

		Rig	3 crew	\$		Rorehole Reference	>										
			Unit E2018, Warmco Tel: 01457 833910, Fax: 01457	Industry Park, Manches 833920, Email: info@ee	er Road, Mossley, OLS 9AY; Monuk.co.uk. www.sectronuk.co.uk	Sheet 1 of 1	Weather S										
Job Ref: WTE2366 Site Location:	Ricester	Client: BL	SC	Day	T. josdau	hate: 1/20/04/3	Borehole Diame										
(mbg()	Strata Description	Test Type From (m	s) To (m)	TdS	N Value or U10	0/ Piston Recovery Casing Depth Water leve	150										
GLA TOP Soil		B 0.2	1.20	00.021 C23.001	0 300-375 375-450	funt funt foot connection	Installation Det										
P. L Sost Light-yellows scind		SPT 1.2	1. 4 14	30 20	50	0											
1.2 Very hurd Bedroch lim	nestone						, <sup>1</sup> ,1										
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Borehole completed at (m)	Berehole continues																
			-														
Remarks: (Standing time, dayworks, in situ testing, visitors etc.)		Dayworks/Standing	Chisellin			Water Strikes											
Rig Set Up up to 1 hour	Time takes a set of the state of the		From (m) to (m)	Time (mins)	Time Depth (m) Rate of Rise	Rising to (mins)	Total										
Service Pit up to 1 hour	Time taken over 1 hour (dayworks)					5 10 15 20											
Casing Reduced from to	at metres Time taken (dayworks)		1-2-1.20	60muns													
From To Description																	
10:10 10:40 Jonin's Inchall																	
			Well Diameter		Other Materials U	sed (e.g. lost cones/shoes etc.)											
			Plain Screen	6	o. Smeter Plan	1 Mw8(over											
			Quantity (bags)	Gravel Bento	1 Out Incured	Gollow Cons	-										
Time or Side		Samj	ple quantities	-	12 Buy Bento												
RETIPO dando 2500/1	07:32	SPT/CPT U/UT	D/SD B W	Foreman's Name	LSJ	Engineer's Name	And the second s										
Name Callow	17:00	1	1	Foreman's Signature	Call on Constand	Engineer's Signature											
					A REAL PROPERTY AND												
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Creotron		DRILLING LOG		Rig crev	×	2	+	3					Borehol	e Refer	ence	BHI	ω
				10	Unit E2 1: 01457 83391	018, Warmco I 0, Fax: 01457 8	ndustry Park, 33920, Email:	Manchester F Info@geotro	load, Mossie muk.co.uk, w	y, OLS 9AY; ww.geotronu	k.co.uk		S	heet į o	-	Veather	Sunny
Job Ref: NTE2366	Site Location:	Bicester	Client:	BWB				Day:	Tucs	licury		Date:	15/06	120	F		Borehole Diameter(s)
Depth (mbgt)		Strata Description	Test Type	From (m) T	5 (m)	75.150	150.375	PI			Value or UI KPA	00/ Piston blows	Recovery Ca	sing Depth V	Vater level	Liner size	ISCAN
GL TOP Soil			2	-1 6.2	2			And and		Detreto			1	į	1		THE DEFICIENCY OF THE PARTY
0.2 Hard derk gro	en cluy		SPT	1.2 1.	1 33	2	3	ω	ω	N	=			_	1		2
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1. 90 Hard Gray Cla	L'A		0 1	.40 2.	8						_						· 1
4.30 Very hand ise	drock cimes	one	SPT 2	.00 2.	1 54	2	S	ω	w	N	=			2			ed-
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Borehole completed at (m)	1.30	Borehole continues										_					
Remarks: (Standing time, dayworks, in situ	testing, visitors etc.)		Dayworks/Sta	anding		Chiselling						Water S	trikes				
Rig Set Up up to 1 hour	7	Time taken over 1 hour (dayworks)	(s		From (m) t	o (m)	Time (	mins)	Time De	opth (m) Rat	t of Rise	-	Rising to (m	ins)		Total	
Service Pit up to 1 hour	1	Time taken over 1 hour (dayworks)	<u>s</u>	Т					2:20 1	20	-	140	10	15	3 20		
Casing Reduced from	6	at metres Time taken (dayworks)						_		-	-	~~~	-		8		
From To Description										-	_	_	_		_		
14:00 15:00 one hour	chisting														_		
15:15 16:00 Instull									_	-	-	-	_	_	_		
				П	Well Dian	neter				Other	Materials	Used (e.g	lost cones/	shoes etc.			
				Plair		Screen	to	6.	Smeter	Slott	ed	-	Mws /	over			
				Τ	Well Materia	als Used	Gravel	Bento	mete	( plun			y sub	50			
					Quantity (	bags)			228	Grave	6	-	Botton	end	6		
	Time on Site			Sample qu	lantities			-	Burg	Bento						5	rell Tag
Rie Type Dounde 2500/1	P	07:31	SPT/CPT U	J/UT D/	SD B	٤	Foreman's	Name	allon	Sha	pland		Engineer's Na	ma			
Name Callon Shaple	a lime on site	17:00	η	2	F		Foreman's S	ignature		4		_	ngineer's Sign	ature			
The abov	e are the driller's	site descriptions and factual data only and are s	subject to	amend	ment af	ter che	king b	v or un	der the	super	vision	ofan	enginee	er or ge	pologis	t.	
										-							

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# **APPENDIX 4**

# TRIP HAMMER CALIBRATION CERTIFICATE

# **SPT Hammer Energy Test Report**

13/04/2017

13/04/2017

AR95.spt

SH

in accordance with BSEN ISO 22476-3:2005

# ARCHWAY ENGINEERING AINLEYS INDUSTRIAL ESTATE ELLAND WEST YORKSHIRE HX59JP

#### **Instrumented Rod Data**

Diameter d <sub>r</sub> (mm):	54
Wall Thickness tr (mm):	6.0
Assumed Modulus Ea (GPa):	208
Accelerometer No.1:	7080
Accelerometer No.2:	11609

#### **SPT Hammer Information**

SPT Hammer Ref: AR95

Test Date:

File Name:

Report Date:

Test Operator:

Hammer Mass	m (kg):	63.5
Falling Height	h (mm):	760
SPT String Len	gth L (m):	10.0

# Comments / Location CALIBRATION







## Calculations

Area of Rod A (mm2):		905
Theoretical Energy Ethe	or (J):	473
Measured Energy E <sub>meas</sub>	; (J):	338

Energy Ratio Er (%):

71

The recommended calibration interval is 12 months





M. Gardhe

Signed: M.GARDNER Title: FITTER

# **SPT Hammer Energy Test Report**

in accordance with BSEN ISO 22476-3:2005

Archway Engineering Ainleys Industrial Estate Elland West Yorkshire HX5 9JP

#### **Instrumented Rod Data**

Diameter d <sub>r</sub> (mm):	54
Wall Thickness tr (mm):	6.1
Assumed Modulus E <sub>a</sub> (GPa):	200
Accelerometer No.1:	7080
Accelerometer No.2:	7079

SPI Hammer Re	r: AR932
Test Date:	21/06/2016
Report Date:	6/21/2016
File Name:	AR932.spt
Test Operator:	SH

## **SPT Hammer Information**

Hammer Mass	m (kg):	63.5
Falling Height	h (mm):	760
SPT String Len	gth L (m):	10.0

Comments / Location CALIBRATION

5

Title:





10

Velocity



# Calculations

m/sec2

Area of Rod A (mm2):		918
Theoretical Energy E <sub>theor</sub>	(J):	473
Measured Energy E <sub>meas</sub>	(J):	314

Energy Ratio E r (%):

66



The recommended calibration interval is 12 months



# **APPENDIX 5**

# GAS AND GROUNDWATER MONITORING RESULTS

Site:		Lakeview Drive, Bicester	NR = Not Recorded
Client:		Sladen Estates	Dry = No Groundwater
Job No.:		NTE2366	
Date:		24 August 2017	
Start / End Time:		11:30 - 13:40	
Engineer:		EMS	
Monitoring Equipment:	Gas Meter ID	BWB00956	
	PIDID	BWB00998	
	Dip Tape	BWB00945	CONSULTANCY   ENVIRONMENT
	Other		INFRASTRUCTURE   BUILDINGS

Weather Conditions	Start	End
(Dry / Raining)	Dry	Dry
Cloud Cover (Oktas)	8/8	8/8
Wind Strength (m/s)	7.0	8.0
Wind Direction (from)	SSE	SE
Temperature (°C)	19.0	22.0
Barometric Pressure (mb)	1013	1010
(Rising/ Falling)		
PID - Air	0	0
PID - Calibration Gas		

	Relative	Flow	(l/hr)	Methane	• (%v/v)	Carbon (%	Dioxide v/v)	Oxyger	ı (%v/v)	Hydrogen Sulphide	Carbon Monoxide	PID	Depth to water	Base of Response	Free-Phase Product	Groundwater	Notes
Location Reference	Pressure (mbar)	Peak	Steady	Peak	Steady	Peak	Steady	Min	Steady	(ppm)	(ppm)	(ppm)	(m)	Zone (m)	Level Top (m)	Elevation (m AOD)	
Ambient Air Start (Calibration)																	
Ambient Air Finish (Calibration)																	
BH101			<0.1		<0.1		0.1		16.9	<0.1	21.0	<0.1	1.15	2.32		65.52	
BH102			<0.1		<0.1		0.6		20.2	<0.1	<0.1	<0.1	1.10	2.90		64.78	
BH103			<0.1		<0.1		0.1		20.3	<0.1	31.0	<0.1	0.82	3.82		-0.82	
BH104													2.05	2.18		64.47	No bung in borehole therefore gas not measured
BH105			<0.1		<0.1		0.3		19.7	<0.1	<0.1	<0.1	0.72	1.60		64.10	
BH106			<0.1		<0.1		0.8		16.5	<0.1	<0.1	<0.1	1.75	2.64		64.05	Silt on dip
BH107			<0.1		<0.1		0.6		17.8	<0.1	<0.1	<0.1	3.17	3.28		62.05	
BH108			<0.1		<0.1		0.2		17.8	<0.1	<0.1	<0.1	Dry	3.18			
BH109			<0.1		<0.1		0.9		16.6	<0.1	<0.1	<0.1	Dry	3.48			
BH110			<0.1		<0.1		1.0		16.0	<0.1	<0.1	<0.1	2.98	3.36		62.67	
BH112			<0.1		<0.1		0.6		15.4	<0.1	<0.1	<0.1	NR	NR			Bentonite/cement set over bung, can not remove
BH113			<0.1		<0.1		0.3		17.0	<0.1	<0.1	<0.1	0.72	4.32		63.91	

Site:		Lakeview Drive, Bicester	NR = Not Recorded
Client:		Sladen Estates	Dry = No Groundwater
Job No.:		NTE2366	
Date:		31/08/2017	
Start / End Time:		11:00-13:30	
Engineer:		EMS	
Monitoring Equipment:	Gas Meter ID	BWB00956	
	PIDID	BWB00998	
	Dip Tape	BWB00945	
	Other		

Weather Conditions Start End (Dry / Raining) Spitting Dry Cloud Cover (Oktas) Wind Strength (m/s) 6/8 5/8 3.0 3.0 Wind Direction (from) SSW SW Temperature (°C) 13.0 13.0 Barometric Pressure (mb) 1010 1008 (Rising/ Falling) PID - Air 0 0 PID - Calibration Gas

	Relative	Flow	(I/hr)	Methan	e (%v/v)	Carbon (%	Dioxide v/v)	Oxyger	ı (%v/v)	Hydrogen Sulphide	Carbon Monoxide	PID	Depth to water	Base of Response	Free-Phase Product	Groundwater	Notes
Location Reference	Pressure (mbar)	Peak	Steady	Peak	Steady	Peak	Steady	Min	Steady	(ppm)	(ppm)	(ppm)	(m)	Zone (m)	Level Top (m)	Elevation (m AOD)	
Ambient Air Start																	
Ambient Air Finish																	
(Calibration)																	
BH101			<0.1		<0.1		0.4		19.2	<0.1	<0.1	<0.1	1.30	2.32		65.37	
BH102			<0.1		<0.1		3.7		15.0	<0.1	<0.1	<0.1	1.18	2.90		64.70	
BH103			<0.1		<0.1		0.1		20.5	<0.1	<0.1	<0.1	0.87	3.80		-0.87	
BH104			<0.1		<0.1		1.0		19.3	<0.1	<0.1	0.1	1.96	2.18		64.56	
BH105			<0.1		<0.1	-	0.4		20.2	<0.1	<0.1	<0.1	0.78	1.62		64.04	
BH106			<0.1		<0.1		1.8		17.8	<0.1	<0.1	<0.1	1.78	2.65		64.02	silt on dip
BH107			<0.1		<0.1	-	1.5		18.2	<0.1	<0.1	<0.1	2.92	3.29		62.30	
BH108			0.4		<0.1		0.7		18.3	<0.1	<0.1	<0.1	3.05	3.15		64.10	
BH109			0.4		<0.1	-	1.2		15.3	<0.1	<0.1	<0.1	3.38	3.48		62.51	
BH110			<0.1		<0.1		1.7		17.4	<0.1	<0.1	0.2	2.98	3.35		62.67	
BH112			<0.1		<0.1		1.1		18.7	<0.1	<0.1	<0.1	NR	NR			Bung sealed over - could not remove
BH113			<0.1		<0.1		0.1		20.6	<0.1	<0.1	<0.1	0.78	4.32		63.85	
			1						-								
			1						-								
			1														
			1		1												

Site:		Lakeview Drive, Bicester	NR = Not Recorded	
Client:		Sladen Estates	Dry = No Groundwater	
Job No.:		NTE2366		
Date:		06/09/2017		
Start / End Time:		10:00 - 15:00		
Engineer:		EMS		
Monitoring Equipment:	Gas Meter ID	BWB00956		
	PID ID	BWB00998	CONSULTANCY   ENVIRONMENT	
	Dip Tape	BWB00945	INFRASTRUCTURE   BUILDINGS	
	Other			

Weather Conditions	Start	End
(Dry / Raining)	Dry	Dry
Cloud Cover (Oktas)	4/8	5/8
Wind Strength (m/s)	13.0	13.0
Wind Direction (from)	W	WNW
Temperature (°C)	15.0	17.0
Barometric Pressure (mb)	1011	1011
(Rising/ Falling)		
PID - Air	0	0
PID - Calibration Gas		

	Relative	Flow	(l/hr)	Methane (	%v/v)	Carbon (%	Dioxide v/v)	Oxyger	ı (%v/v)	Hydrogen Sulphide	Carbon Monoxide	PID	Depth to water	Base of Response	Free-Phase Product	Groundwater	Notes
Location Reference	Pressure (mbar)	Peak	Steady	Peak	Steady	Peak	Steady	Min	Steady	(ppm)	(ppm)	(ppm)	(m)	Zone (m)	Level Top (m)	Elevation (m AOD)	
Ambient Air Start																	
Ambient Air Finish (Calibration)																	
BH101	1011.0000		<0.1		<0.1		3.5		15.1	<1	<1	<0.1	1.20	2.90		65.47	
BH102			<0.1		<0.1		0.4		19.1	<1	<1	<0.1	1.35	2.32		64.53	
BH103			<0.1		<0.1		0.1		20.4	<1	<1	<0.1	0.90	3.82		-0.90	
BH104			<0.1		<0.1		0.9		20.0	<1	<1	0.1	1.95	2.16		64.57	
BH105			<0.1		<0.1		0.4		20.4	<1	<1	0.0	0.86	1.60		63.96	
BH106			<0.1		<0.1		1.7		18.6	<1	<1	<0.1	1.78	2.63		64.02	
BH107			<0.1		<0.1		1.0		19.5	<1	<1	<0.1	2.75	3.28		62.47	
BH108			<0.1		<0.1		0.8		19.3	<1	<1	<0.1	2.95	3.15		64.20	
BH109			<0.1		<0.1		1.5		17.5	<1	<1	<0.1	3.48	3.48		62.41	
BH110			<0.1		<0.1		1.4		19.1	<1	<1	0.1	2.10	3.36		63.55	
BH112			<0.1		<0.1		0.4		20.3	<1	<1	<0.1	NR	NR			bung cemented over- cannot remove
BH113			<0.1		<0.1		0.8		19.2	<1	<1	<0.1	0.74	4.32		63.89	

Site:		Lakeview Drive, Bicester	NR = Not Recorded			
Client:		Sladen Estates	Dry = No Groundwater			
Job No.:		NTE2366				
Date:		13.9.17				
Start / End Time:		8:25 / 11:25				
Engineer:		Y Lawson				
Monitoring Equipment:	Gas Meter ID	BWB00957				
	PIDID	BWB00998				
	Dip Tape	BWB00944	INFRASTRUCTURE   BUILDINGS			
	Other					

Weather Conditions Start End (Dry / Raining) Dry Dry Cloud Cover (Oktas) 1 3 Wind Strength (m/s) Wind Direction (from) 2.9 3.5 SW SW Temperature (°C) 12.0 23.0 Barometric Pressure (mb) 991 992 (Rising/ Falling) PID - Air 0 0 PID - Calibration Gas

Relative		Flow	(l/hr)	Methane	e (%v/v)	Carbon (%	Dioxide v/v)	Oxygen (%v/v)		Hydrogen Sulphide	Carbon Monoxide (ppm)	PID	Depth to water	Base of Response	Free-Phase Product	Groundwater	Notes
Location Reference	Pressure (mbar)	Peak	Steady	Peak	Steady	Peak	Steady	Min	Steady	(ppm)	(ppm)	(ppm)	(m)	Zone (m)	Level Top (m)	Elevation (m AOD)	
Ambient Air Start (Calibration)																	
Ambient Air Finish (Calibration)																	
BH101			<0.1		<0.1		0.6		19.7	<1	<1	<0.1	1.28	2.33		65.39	
BH102			<0.1		<0.1		2.4		18.5	<1	<1	<0.1	1.25	2.85		64.63	
BH103			<0.1		<0.1		0.7		17.5	<1	<1	<0.1	0.89	3.80		-0.89	
BH104			<0.1		<0.1		0.5		16.9	<1	<1	<0.1	0.78	1.60		65.74	
BH105		23.0	<0.1		<0.1		0.9		19.8	<1	<1	<0.1	1.97	2.00		62.85	
BH106			<0.1		<0.1		1.7		17.9	<1	<1	<0.1	1.84	2.65		63.96	
BH107			<0.1		<0.1		1.1		19.1	<1	<1	<0.1	1.69	3.29		63.53	
BH108			<0.1		<0.1		1.1		19.1	<1	<1	<0.1	1.93	3.16		65.22	
BH109		0.3	<0.1		<0.1		1.8		17.4	<1	<1	<0.1	3.15	3.45		62.74	
BH110			<0.1		<0.1		1.3		19.0	<1	<1	<0.1	2.51	3.37		63.14	
BH112			<0.1		<0.1		0.7		19.9	<1	<1	<0.1	1.78	3.28		64.19	
BH113			<0.1		<0.1		0.3		19.5	<1	<1	<0.1	0.79	4.33		63.84	



# **APPENDIX 6**

# TRL DYNAMIC CONE PENETATION RESULTS

PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP126	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.30	
WEATHER/ GROUND CONDITION	Dry	

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm	CBR (%)
			(1111)	ugi)	
1	4	4	295	295	3.2
2	5	9	391	686	3.0



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP101	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.3	
WEATHER/ GROUND CONDITION	Dry	

Lavor	Blows	Cumulativo Blows	Layer	Total	
Layer	DIOWS	Cumulative Diows	(mm)	bgl)	
1	13	13	127	127	27.2
2	8	21	205	332	9.8
3	21	42	192	524	29.1
4	15	57	188	712	20.9



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP103	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.40	
WEATHER/ GROUND CONDITION	Dry	

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm	CBR (%)
			(11111)	ugi)	
1	7	7	55	55	34.4
2	10	17	95	150	28.0
3	10	27	7	157	>100



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP104	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.35	
WEATHER/ GROUND CONDITION	Dry	

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)
1	3	3	172	172	4.2
2	7	10	92	264	19.8
3	30	40	65	329	>100



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP105	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.40	
WEATHER/ GROUND CONDITION	Dry	

			Layer	Total	
Layer	Blows	Cumulative Blows	Thickness	Depth (mm	CBR (%)
			(mm)	bgl)	
1	3	3	229	229	3.1
2	8	11	134	363	15.4
3	31	42	189	552	44.7



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP107	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.30	
WEATHER/ GROUND CONDITION	Dry	

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)
1	18	18	758	758	5.8
2	7	25	84	842	21.8



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP108	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.35	
WEATHER/ GROUND CONDITION	Dry	

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)
1	5	5	376	376	3.1
2	36	41	245	621	39.8



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP111	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.25	
WEATHER/ GROUND CONDITION	Dry	

			Layer	Total	
Layer	Blows	Cumulative Blows	Thickness	Depth (mm	CBR (%)
			(mm)	bgl)	
1	5	5	286	286	4.2
2	4	9	184	470	5.3
3	12	21	203	673	15.2
4	5	26	45	718	29.6



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP112	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.25	
WEATHER/ GROUND CONDITION	Dry	

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)
1	9	9	813	813	2.6
2	2	11	66	879	7.5



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP119	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.30	
WEATHER/ GROUND CONDITION	Dry	

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)
1	2	2	178	178	2.6
2	9	11	646	824	3.3



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP120	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.30	
WEATHER/ GROUND CONDITION	Dry	

			Layer	Total	
Layer	Blows	Cumulative Blows	Thickness	Depth (mm	CBR (%)
			(mm)	bgl)	
1	15	15	510	510	7.3
2	10	25	346	856	7.1



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP121	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.30	
WEATHER/ GROUND CONDITION	Dry	

			Layer	Total	
Layer	Blows	Cumulative Blows	Thickness	Depth (mm	CBR (%)
			(mm)	bgl)	
1	15	15	893	893	4.0



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP122	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.35	
WEATHER/ GROUND CONDITION	Dry	

_			Layer	Total	
Layer	Blows	Cumulative Blows	Thickness	Depth (mm	CBR (%)
			(mm)	bgl)	
1	15	15	856	856	4.2



PROJECT NUMBER	NTE2366	
PROJECT TITLE	Lakeview Drive, Bicester	
TEST REFERENCE	TP124	
DATE	15-Aug-17	
MATERIAL/ STRATA TYPE	Natural	
START DEPTH (mm bgl)	0.7	
WEATHER/ GROUND CONDITION	Dry	

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)
1	26	26	314	315	21.7
2	15	41	72	387	57.5





# APPENDIX 7

# SOIL AND SOIL LEACHATE CHEMICAL ANALYSIS RESULTS



Luke Cross **BWB** Consulting Limited 5th Floor Waterfront House Nottingham NG2 3DQ



i2 Analytical Ltd. 7 Woodshots Meadow, **Croxley Green** Business Park, Watford, Herts, WD18 8YS

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e: luke.cross@bwbconsulting.com

# Analytical Report Number : 17-58560

Project / Site name:	Lakeview Drive, Bicester	Samples received on:	17/08/2017
Your job number:	NTE2366	Samples instructed on:	23/08/2017
Your order number:	POR012935	Analysis completed by:	06/09/2017
Report Issue Number:	1	Report issued on:	06/09/2017
Samples Analysed:	6 soil samples		

Signed:

Rexona Rahman **Reporting Manager** For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012935

Sample Reference Sample Number Denth (m)				DU101				
Sample Number Denth (m)		Sample Reference					BH106	BH110
Depth (m)	Sample Number					2	3	5
- opt ()	0.00-1.00	1.00-1.45	1.20-1.65	0.50-1.00	2.50-3.00			
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating			
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	9.7	8.4	9.4	14	19
Total mass of sample received	kg	0.001	NONE	0.69	0.91	0.82	0.39	0.60

#### **General Inorganics**

pH - Automated	pH Units	N/A	MCERTS	9.5	8.4	8.4	8.1	7.6
Water Soluble SO4 16hr extraction (2:1 Leachate								
Equivalent)	g/l	0.00125	MCERTS	0.36	0.035	0.020	0.042	1.0





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012935

Lab Sample Number				806398			
Sample Reference				BH112			
Sample Number	Sample Number						
Depth (m)	2.00-2.50						
Date Sampled	Deviating						
Time Taken	None Supplied						
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1			
Moisture Content	%	N/A	NONE	19			
Total mass of sample received	kg	0.001	NONE	0.33			

#### **General Inorganics**

pH - Automated	pH Units	N/A	MCERTS	7.8		
Water Soluble SO4 16hr extraction (2:1 Leachate						
Equivalent)	g/l	0.00125	MCERTS	0.36		





#### Project / Site name: Lakeview Drive, Bicester

\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
806393	BH101	1	0.00-1.00	Light brown loam and clay with gravel.
806394	BH102	1	1.00-1.45	Light brown clay and sand with gravel.
806395	BH103	2	1.20-1.65	Light brown clay and sand.
806396	BH106	3	0.50-1.00	Brown clay and sand with gravel and vegetation.
806397	BH110	5	2.50-3.00	Grey clay.
806398	BH112	5	2.00-2.50	Grey clay.





Project / Site name: Lakeview Drive, Bicester

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP- OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP- OES.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom. For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH101	1	S	17-58560	806393	a			
BH102	1	S	17-58560	806394	a			
BH103	2	2 S	17-58560	806395	a			
BH106	3	3 S	17-58560	806396	a			
BH110	5	5 S	17-58560	806397	a			
BH112	5	5 S	17-58560	806398	a			



Luke Cross BWB Consulting Limited 5th Floor Waterfront House Nottingham NG2 3DQ



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# Analytical Report Number : 17-58244

Project / Site name:	Lakeview Drive, Bicester	Samples received on:	17/08/2017
Your job number:	NTE2366	Samples instructed on:	23/08/2017
Your order number:	POR012937	Analysis completed by:	04/09/2017
Report Issue Number:	1	Report issued on:	04/09/2017
Samples Analysed:	3 leachate samples - 16 soil samples		

Signed:

Dr Irma Doyle Senior Account Manager For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	<ul> <li>4 weeks from reporting</li> </ul>
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number			804157	804158	804159	804160	804161	
Sample Reference				TD101	TD101	TD102	TD102	TD102
Sample Number				1	7	1	2	1
Depth (m)				0.20-0.30	0.40-0.50	0.10-0.20	0.40-0.50	0.20-0.30
Date Sampled				15/08/2017	15/08/2017	15/08/2017	15/08/2017	15/08/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
			A					
Analytical Parameter (Soil Analysis)	Units	Limit of detection	ccreditatior Status					
Stone Content	0/4	0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	-70 9/6	0.1 N/A	NONE	16	10	79	12	11
Total mass of sample received	ka	0.001	NONE	2.0	2.0	2.0	2.0	2.0
					•	•		
Asbestos in Soil Screen / Identification Name	Туре	N/A	ISO 17025	-	-	Chrysotile- Loose Fibres	-	Chrysotile- Loose Fibres
Asbestos in Soil	Туре	N/A	ISO 17025	Not-detected	-	Detected	-	Detected
General Inorganics				7.0		~ 7	0.4	
pri - Automated	pH Units	N/A 1	MCERTS	/.8	8.0	9./	8.1	8.1
Complex Cvanide	mg/kg	1	MCERTS	<1	< 1 < 1	< 1	<1	< 1
Free Cvanide	ma/ka	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate		-			· · ·		· · ·	
Equivalent)	g/l	0.00125	MCERTS	0.025	0.021	0.64	0.049	0.85
Total Sulphur	mg/kg	50	MCERTS	790	650	1500	610	1300
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.044	0.024	0.017	0.020	0.015
Total Phenois								
Total Phenols (monohydric)	ma/ka	1	MCEDTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	nig/kg	1	MCER15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.73	0.39	0.19
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.21	0.19	< 0.05
Durana	mg/kg	0.05	MCEDTS	0.24	< 0.05	2.2	1.2	0.67
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.22	< 0.05	1 4	0.82	0.00
Chrysene	ma/ka	0.05	MCERTS	0.15	< 0.05	1.6	0.96	0.45
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.13	< 0.05	2.0	1.2	0.43
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.13	< 0.05	1.4	0.59	0.41
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.17	< 0.05	2.4	1.2	0.55
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.5	0.63	0.30
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.23	0.14	0.09
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.9	0.86	0.39
Speciated Total EPA-16 PAHs	ma/ka	0.8	MCERTS	1.16	< 0.80	17.5	9,29	4.50
Specifical Four Environning	ing/itg	0.0	HEEKIS	1.10	0.00	17.5	5.25	1.50
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	28	19	12	20	22
Barium (aqua regia extractable)	mg/kg	1	MCERTS	72	49	130	81	68
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	0.70	0.43	0.61	0.72
Boron (water soluble)	mg/kg	0.2	MCERTS	4.5	3.0	3.3	2.3	1.7
Caamium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0./	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	4	MCEDTO	<u>&lt; 4.0</u> วว	< 4.U 10	< 4.U 01	< 4.U 01	< 4.0 22
Copper (aqua regia extractable)	ma/ka	1	MCERTS	41	19	72	35	36
Lead (aqua regia extractable)	ma/ka	1	MCERTS	51	23	67	40	30
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	19	14	18	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	71	49	31	43	40
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	95	48	170	78	79





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number				804157	804158	804159	804160	804161
Sample Reference		TP101	TP101	TP102	TP102	TP103		
Sample Number				1	2	1	2	1
Depth (m)				0.20-0.30	0.40-0.50	0.10-0.20	0.40-0.50	0.20-0.30
Date Sampled				15/08/2017	15/08/2017	15/08/2017	15/08/2017	15/08/2017
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

#### Monoaromatics

Benzene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-

#### Petroleum Hydrocarbons

TPH C10 - C40	mg/kg	10	MCERTS	48	27	1000	61	46
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC5 - EC6	ma/ka	0.001	MCERTS	< 0.001	-	< 0.001	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	7.0	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	15	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	15	-	200	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	19	-	220	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	4.3	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	4.2	-	14	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	-	33	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	18	-	410	-	-
TPH-CWG - Aromatic (EC5 - EC35)	ma/ka	10	MCERTS	27	-	460	-	-





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number				804157	804158	804159	804160	804161
Sample Reference	TP101	TP101	TP102	TP102	TP103			
Sample Number				1	2	1	2	1
Depth (m)			0.20-0.30	0.40-0.50	0.10-0.20	0.40-0.50	0.20-0.30	
Date Sampled			15/08/2017	15/08/2017	15/08/2017	15/08/2017	15/08/2017	
Time Taken			None Supplied					
Analytical Parameter (Soil Analysis)								
Environmental Forensics								

#### **Organochlorine Pesticides**

Aldrin	µg/kg	10	NONE	-	-	-	-	-
Alpha-HCH (Alpha BHC)	µg/kg	10	NONE	-	-	-	-	-
Beta-HCH (Beta-BHC)	µg/kg	10	NONE	-	-	-	-	-
Chlordane (sum of cis & trans isomers)	µg/kg	10	NONE	-	-	-	-	-
Delta-HCH (Delta-BHC)	µg/kg	10	NONE	-	-	-	-	-
Dieldrin	µg/kg	10	NONE	-	-	-	-	-
Endosulphan A	µg/kg	10	NONE	-	-	-	-	-
Endosulphan B	µg/kg	10	NONE	-	-	-	-	-
Endrin	µg/kg	10	NONE	-	-	-	-	-
Gamma-HCH (Lindane) (Gamma-BHC)	µg/kg	10	NONE	-	-	-	-	-
HCB (Hexachlorobenzene)	µg/kg	10	NONE	-	-	-	-	-
Heptachlor	µg/kg	10	NONE	-	-	-	-	-
Heptachlor Epoxide	µg/kg	10	NONE	-	-	-	-	-
Isodrin	µg/kg	10	NONE	-	-	-	-	-
pp-Methoxychlor	µg/kg	10	NONE	-	-	-	-	-
o,p-DDE	µg/kg	10	NONE	-	-	-	-	-
o,p-DDT	µg/kg	10	NONE	-	-	-	-	-
o,p-TDE (o,p-DDD)	µg/kg	10	NONE	-	-	-	-	-
p,p-DDE	µg/kg	10	NONE	-	-	-	-	-
p,p-DDT	µg/kg	10	NONE	-	-	-	-	-
p,p-TDE (p,p-DDD)	µg/kg	10	NONE	-	-	-	-	-
Trifluralin	µg/kg	10	NONE	-	-	-	-	-

#### Organophosphorous pesticides

Azinphos-methyl	µg/kg	10	NONE	-	-	-	-	-
Chlorfenvinphos I (cis)	µg/kg	10	NONE	-	-	-	-	-
Chlorfenvinphos II (trans)	µg/kg	10	NONE	-	-	-	-	-
Chlorfenvinphos-methyl	µg/kg	10	NONE	-	-	-	-	-
Diazinon	µg/kg	10	NONE	-	-	-	-	-
Dichlorvos	µg/kg	10	NONE	-	-	-	-	-
Dimethoate	µg/kg	10	NONE	-	-	-	-	-
E-mevinphos	µg/kg	10	NONE	-	-	-	-	-
Z-mevinphos	µg/kg	10	NONE	-	-	-	-	-
Fenitrothion	µg/kg	10	NONE	-	-	-	-	-
Fenthion	µg/kg	10	NONE	-	-	-	-	-
Malathion	µg/kg	10	NONE	-	-	-	-	-
Parathion-ethyl	µg/kg	10	NONE	-	-	-	-	-
Parathion-methyl	µg/kg	10	NONE	-	-	-	-	-
Phorate	µg/kg	10	NONE	-	-	-	-	-





Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number				804162	804163	804164	804165	804166
Sample Reference				TP103	TP105	TP106	TP107	TP114
Sample Number				2	1	1	2	1
Depth (m)	0.90-1.00	0.50-0.60	0.10-0.20	0.50-0.60	0.10-0.20			
Date Sampled				15/08/2017	15/08/2017	15/08/2017	16/08/2017	15/08/2017
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	18	41	28	12	18
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0
Asbestos in Soil Screen / Identification Name	Туре	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Туре	N/A	ISO 17025	-	-	Not-detected	-	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	7.4	7.6	8.1	7.7
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Complex Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate	- //	0.00125	MOEDTO	0.22	0.045	0.001	0.025	0.020
Equivalent) Total Sulabur	g/l	0.00125	MCERTS	610	0.045	1000	0.025	0.028
Fraction Organic Carbon (EOC)	N/Δ	0.001	NONE	0.015	0.094	0.060	0.0015	0.029
ración organic carbon (roc)	N/A	0.001	NONE	0.015	0.051	0.000	0.0015	0.029
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
· · · · ·								
Speciated PAHs								1
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracono	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	ma/ka	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diberiz(d,ii)diuliacene Benzo(dhi)nervlene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Denzo(gni)perviene	iiig/kg	0.05	PICERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids					<u></u>		10	10
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	9.1	10	10	18
Beryllium (aqua regia extractable)	mg/kg	0.06	MCEPTS	41 0.85	<u>ە</u> ت 1 ؟	08 0 R0	<u>∠ŏ</u> 0 47	0.86
Boron (water soluble)	ma/ka	0.2	MCERTS	2.9	8.1	7.7	0.6	4.3
Cadmium (agua regia extractable)	ma/ka	0.2	MCERTS	< 0.2	0.4	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	26	21	11	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	59	32	14	41
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	15	41	5.6	29
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	20	15	13	20
Selenium (aqua regia extractable)	mg/kg	1	MCEDIC	< 1.0	4.8 61	< 1.U 42	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	<del>סד</del> 36	21	<del>د ۲</del> 52	25	100
(aquu regiu exclueico)	iiig/kg	1	TIGENTJ		<u>-</u>	52	23	100




#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number				804162	804163	804164	804165	804166
Sample Reference				TP103	TP105	TP106	TP107	TP114
Sample Number			2	1	1	2	1	
Depth (m)				0.90-1.00	0.50-0.60	0.10-0.20	0.50-0.60	0.10-0.20
Date Sampled				15/08/2017	15/08/2017	15/08/2017	16/08/2017	15/08/2017
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-

#### Petroleum Hydrocarbons

TPH C10 - C40	mg/kg	10	MCERTS	19	< 10	< 10	< 10	47
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	ma/ka	10	MCERTS	-	-	-	-	-





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number				804162	804163	804164	804165	804166
Sample Reference				TP103	TP105	TP106	TP107	TP114
Sample Number				2	1	1	2	1
Depth (m)				0.90-1.00	0.50-0.60	0.10-0.20	0.50-0.60	0.10-0.20
Date Sampled			15/08/2017	15/08/2017	15/08/2017	16/08/2017	15/08/2017	
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Environmental Forensics								

#### **Organochlorine Pesticides**

Aldrin	µg/kg	10	NONE	-	-	< 10	-	< 10
Alpha-HCH (Alpha BHC)	µg/kg	10	NONE	-	-	< 10	-	< 10
Beta-HCH (Beta-BHC)	µg/kg	10	NONE	-	-	< 10	-	< 10
Chlordane (sum of cis & trans isomers)	µg/kg	10	NONE	-	-	< 10	-	< 10
Delta-HCH (Delta-BHC)	µg/kg	10	NONE	-	-	< 10	-	< 10
Dieldrin	µg/kg	10	NONE	-	-	< 10	-	< 10
Endosulphan A	µg/kg	10	NONE	-	-	< 10	-	< 10
Endosulphan B	µg/kg	10	NONE	-	-	< 10	-	< 10
Endrin	µg/kg	10	NONE	-	-	< 10	-	< 10
Gamma-HCH (Lindane) (Gamma-BHC)	µg/kg	10	NONE	-	-	< 10	-	< 10
HCB (Hexachlorobenzene)	µg/kg	10	NONE	-	-	< 10	-	< 10
Heptachlor	µg/kg	10	NONE	-	-	< 10	-	< 10
Heptachlor Epoxide	µg/kg	10	NONE	-	-	< 10	-	< 10
Isodrin	µg/kg	10	NONE	-	-	< 10	-	< 10
pp-Methoxychlor	µg/kg	10	NONE	-	-	< 10	-	< 10
o,p-DDE	µg/kg	10	NONE	-	-	< 10	-	< 10
o,p-DDT	µg/kg	10	NONE	-	-	< 10	-	< 10
o,p-TDE (o,p-DDD)	µg/kg	10	NONE	-	-	< 10	-	< 10
p,p-DDE	µg/kg	10	NONE	-	-	< 10	-	< 10
p,p-DDT	µg/kg	10	NONE	-	-	< 10	-	< 10
p,p-TDE (p,p-DDD)	µg/kg	10	NONE	-	-	< 10	-	< 10
Trifluralin	µg/kg	10	NONE	-	-	< 10	-	< 10

#### Organophosphorous pesticides

Azinphos-methyl	µg/kg	10	NONE	-	-	< 25.0	-	< 25.0
Chlorfenvinphos I (cis)	µg/kg	10	NONE	-	-	< 10	-	< 10
Chlorfenvinphos II (trans)	µg/kg	10	NONE	-	-	< 10	-	< 10
Chlorfenvinphos-methyl	µg/kg	10	NONE	-	-	< 10	-	< 10
Diazinon	µg/kg	10	NONE	-	-	< 10	-	< 10
Dichlorvos	µg/kg	10	NONE	-	-	< 10	-	< 10
Dimethoate	µg/kg	10	NONE	-	-	< 10	-	< 10
E-mevinphos	µg/kg	10	NONE	-	-	< 10	-	< 10
Z-mevinphos	µg/kg	10	NONE	-	-	< 10	-	< 10
Fenitrothion	µg/kg	10	NONE	-	-	< 10	-	< 10
Fenthion	µg/kg	10	NONE	-	-	< 10	-	< 10
Malathion	µg/kg	10	NONE	-	-	< 10	-	< 10
Parathion-ethyl	µg/kg	10	NONE	-	-	< 10	-	< 10
Parathion-methyl	µg/kg	10	NONE	-	-	< 10	-	< 10
Phorate	µg/kg	10	NONE	-	-	< 10	-	< 10





Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number				804167	804168	804169	804170	804171			
Sample Reference				TD114	TD118	TD110	TP120	TD121			
Sample Number				5	2	2	1	1			
Depth (m)				1.00-1.20	0.70-0.80	0.80-0.90	0.60-0.70	0.10-0.20			
Date Sampled				15/08/2017	17/08/2017	17/08/2017	17/08/2017	16/08/2017			
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
			A								
Analytical Parameter	c	료 드	S								
	Init	ëqit	bdit								
	S	ĝ 9	atio								
			ä								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	13	16	13	5.0	15			
Total mass of sample received	kg	0.001	NONE	2.0	1.6	1.4	2.0	1.5			
	r	r	1								
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	_	_			
	.,,,,,	,,,									
Asbestos in Soil	Туре	N/A	ISO 17025	-	-	-	-	-			
General Inorganics								· · · · · · · · · · · · · · · · · · ·			
pH - Automated	pH Units	N/A	MCERTS	8.2	7.3	7.9	8.2	7.0			
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1			
Complex Cyanide	mg/kg		MCERTS	< 1	< 1	< 1	< 1	< 1			
Pree Cyaniae Water Soluble SO4 16br extraction (2:1 Leachate	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1			
Equivalent)	a/l	0.00125	MCERTS	0.019	0.019	0.13	0.011	0.0098			
Total Sulphur	mg/kg	50	MCERTS	270	190	320	280	560			
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0022	0.0037	0.0044	0.0024	0.028			
Iotal Phenois											
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0			
Speciated PAHS		0.05		. 0.05	. 0.05	. 0.05	. 0.05	. 0.05			
	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Fluorene	ma/ka	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Phenanthrene	ma/ka	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Dibonz(2, b)onthrosono	mg/kg	0.05	MCEDIC	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Benzo(abi)nervlene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Denzo(gnr)perviene	iiig/kg	0.05	FIGERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Total PAH											
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80			
Heavy Metals / Metalloids	-	-	-		-		-				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.2	8.0	3.7	14	9.4			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	11	39	35	50	61			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.20	0.71	0.68	0.46	0.84			
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2	2.1	1.8	0.9	5.6			
Caumum (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2			
Chromium (aqua regia extractable)	mg/kg	4	MCEDTO	<u>&lt; 4.0</u> ຊາ	<u>&lt; 4.0</u> つつ	< 4.0 22	< 4.U 14	< 4.U 28			
Copper (aqua regia extractable)	ma/ka	1	MCERTS	19	22	25	25	47			
Lead (aqua regia extractable)	ma/ka	1	MCERTS	4.7	12	11	7.1	39			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	9.3	12	18	19			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	20	32	33	24	40			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	23	32	26	29	78			





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number				804167	804168	804169	804170	804171
Sample Reference				TP114	TP118	TP119	TP120	TP121
Sample Number		5	2	2	1	1		
Depth (m)				1.00-1.20	0.70-0.80	0.80-0.90	0.60-0.70	0.10-0.20
Date Sampled				15/08/2017	17/08/2017	17/08/2017	17/08/2017	16/08/2017
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics										
Benzene	ug/kg	1	MCERTS	-	-	-	-	-		
Toluene	µg/kg	1	MCERTS	-	-	-	-	-		
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-		
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-		
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-		

#### Petroleum Hydrocarbons

TPH C10 - C40	mg/kg	10	MCERTS	< 10	< 10	< 10	19	< 10
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC5 - EC6	ma/ka	0.001	MCERTS	_	-	-	-	-
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	ma/ka	10	MCERTS	-	-	-	-	-





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number				804167	804168	804169	804170	804171
Sample Reference				TP114	TP118	TP119	TP120	TP121
Sample Number		5	2	2	1	1		
Depth (m)				1.00-1.20	0.70-0.80	0.80-0.90	0.60-0.70	0.10-0.20
Date Sampled				15/08/2017	17/08/2017	17/08/2017	17/08/2017	16/08/2017
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Environmental Forensics								

#### **Organochlorine Pesticides**

Aldrin	µg/kg	10	NONE	-	-	-	-	< 10
Alpha-HCH (Alpha BHC)	µg/kg	10	NONE	-	-	-	-	< 10
Beta-HCH (Beta-BHC)	µg/kg	10	NONE	-	-	-	-	< 10
Chlordane (sum of cis & trans isomers)	µg/kg	10	NONE	-	-	-	-	< 10
Delta-HCH (Delta-BHC)	µg/kg	10	NONE	-	-	-	-	< 10
Dieldrin	µg/kg	10	NONE	-	-	-	-	< 10
Endosulphan A	µg/kg	10	NONE	-	-	-	-	< 10
Endosulphan B	µg/kg	10	NONE	-	-	-	-	< 10
Endrin	µg/kg	10	NONE	-	-	-	-	< 10
Gamma-HCH (Lindane) (Gamma-BHC)	µg/kg	10	NONE	-	-	-	-	< 10
HCB (Hexachlorobenzene)	µg/kg	10	NONE	-	-	-	-	< 10
Heptachlor	µg/kg	10	NONE	-	-	-	-	< 10
Heptachlor Epoxide	µg/kg	10	NONE	-	-	-	-	< 10
Isodrin	µg/kg	10	NONE	-	-	-	-	< 10
pp-Methoxychlor	µg/kg	10	NONE	-	-	-	-	< 10
o,p-DDE	µg/kg	10	NONE	-	-	-	-	< 10
o,p-DDT	µg/kg	10	NONE	-	-	-	-	< 10
o,p-TDE (o,p-DDD)	µg/kg	10	NONE	-	-	-	-	< 10
p,p-DDE	µg/kg	10	NONE	-	-	-	-	< 10
p,p-DDT	µg/kg	10	NONE	-	-	-	-	< 10
p,p-TDE (p,p-DDD)	µg/kg	10	NONE	-	-	-	-	< 10
Trifluralin	µg/kg	10	NONE	-	-	-	-	< 10

#### Organophosphorous pesticides

Azinphos-methyl	µg/kg	10	NONE	-	-	-	-	< 25.0
Chlorfenvinphos I (cis)	µg/kg	10	NONE	-	-	-	-	< 10
Chlorfenvinphos II (trans)	µg/kg	10	NONE	-	-	-	-	< 10
Chlorfenvinphos-methyl	µg/kg	10	NONE	-	-	-	-	< 10
Diazinon	µg/kg	10	NONE	-	-	-	-	< 10
Dichlorvos	µg/kg	10	NONE	-	-	-	-	< 10
Dimethoate	µg/kg	10	NONE	-	-	-	-	< 10
E-mevinphos	µg/kg	10	NONE	-	-	-	-	< 10
Z-mevinphos	µg/kg	10	NONE	-	-	-	-	< 10
Fenitrothion	µg/kg	10	NONE	-	-	-	-	< 10
Fenthion	µg/kg	10	NONE	-	-	-	-	< 10
Malathion	µg/kg	10	NONE	-	-	-	-	< 10
Parathion-ethyl	µg/kg	10	NONE	-	-	-	-	< 10
Parathion-methyl	µg/kg	10	NONE	-	-	-	-	< 10
Phorate	µg/kg	10	NONE	-	-	-	-	< 10





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number		804172				
Sample Reference				TD125		
Sample Number				1		 
Depth (m)				0.40-0.50		
Date Sampled				16/08/2017		
Time Taken				None Supplied		
			Ac			
Analytical Parameter	c	Lin	St			
(Soil Analysis)	nits	nit ecti	dita			
(	•	on of	s			
			3			
Stone Content	%	0.1	NONE	< 0.1	 	 
Moisture Content	%	N/A	NONE	12		
Total mass of sample received	ĸy	0.001	NONL	2.0		
Asbestos in Soil Screen / Identification Name	Туре	N/A	ISO 17025	-		
	_					
Asbestos in Soil	Туре	N/A	ISO 17025	-		
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	7.9		
Total Cyanide	mg/kg	1	MCERTS	< 1		
Complex Cyanide	mg/kg	1	MCERTS	< 1		
Free Cyanide	mg/kg	1	MCERTS	< 1	 	 
Water Soluble SO4 16hr extraction (2:1 Leachate	- /1	0.00125	MCEDIC	0.015		
Equivalent) Total Sulphur	g/l ma/ka	50	MCERTS	140		
Fraction Organic Carbon (EOC)	N/A	0.001	NONE	0.0041		
Haddon organie oarbon (100)	,,,	0.001	HOHE	010011		
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0		
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05		
	mg/kg	0.05	MCERTS	< 0.05		
Fluorene	ma/ka	0.05	MCERTS	< 0.05		
Phenanthrene	ma/ka	0.05	MCERTS	< 0.05		
Anthracene	mg/kg	0.05	MCERTS	< 0.05		
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05		
Pyrene	mg/kg	0.05	MCERTS	< 0.05		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05		
Chrysene	mg/kg	0.05	MCERTS	< 0.05		
Benzo(b)Huoranthene	mg/kg	0.05	MCEDITS	< 0.05		
Benzo(a)nvrene	ma/ka	0.05	MCERTS	< 0.05		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05		
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80		
Heavy Metals / Metalloids						
Arsenic (agua regia extractable)	ma/ka	1	MCERTS	16		
Barium (aqua regia extractable)	ma/ka	1	MCERTS	85		
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3		
Boron (water soluble)	mg/kg	0.2	MCERTS	2.2		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	 	 
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26		 
Lopper (aqua regia extractable)	mg/kg	1	MCERTS	26	 	
Leau (ayud regid extractable) Mercury (agua regia extractable)	mg/kg	1	MCEDIC	14 < 0.3		
Nickel (agua regia extractable)	ma/ka	1	MCFRTS	50		
Selenium (aqua regia extractable)	mg/kq	1	MCERTS	< 1.0		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	50		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	86	 	 





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number				804172		
Sample Reference	TP125					
Sample Number				1		
Depth (m)	0.40-0.50					
Date Sampled	16/08/2017					
Time Taken				None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Monoaromatics						
Benzene	ug/kg	1	MCERTS	-		
Toluene	µg/kg	1	MCERTS	-		
Ethylbenzene	µg/kg	1	MCERTS	-		
p & m-xylene	µg/kg	1	MCERTS	-		
o-xylene	µg/kg	1	MCERTS	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-		

#### Petroleum Hydrocarbons

TPH C10 - C40	ma/ka	10	MCERTS	< 10		1		
	iiig/iig	10	HELKIS		<u>р</u>	<u> </u>	<u>р</u>	<u>р</u>
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-				
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-				
TPH-CWG - Aromatic (EC5 - EC35)	ma/ka	10	MCERTS	-				





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR012937

Lab Sample Number	804172					
Sample Reference	TP125					
Sample Number	1					
Depth (m)	0.40-0.50					
Date Sampled	16/08/2017					
Time Taken				None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Environmental Forensics						

#### **Organochlorine Pesticides**

Aldrin	µg/kg	10	NONE	-		
Alpha-HCH (Alpha BHC)	µg/kg	10	NONE	-		
Beta-HCH (Beta-BHC)	µg/kg	10	NONE	-		
Chlordane (sum of cis & trans isomers)	µg/kg	10	NONE	-		
Delta-HCH (Delta-BHC)	µg/kg	10	NONE	-		
Dieldrin	µg/kg	10	NONE	-		
Endosulphan A	µg/kg	10	NONE	-		
Endosulphan B	µg/kg	10	NONE	-		
Endrin	µg/kg	10	NONE	-		
Gamma-HCH (Lindane) (Gamma-BHC)	µg/kg	10	NONE	-		
HCB (Hexachlorobenzene)	µg/kg	10	NONE	-		
Heptachlor	µg/kg	10	NONE	-		
Heptachlor Epoxide	µg/kg	10	NONE	-		
Isodrin	µg/kg	10	NONE	-		
pp-Methoxychlor	µg/kg	10	NONE	-		
o,p-DDE	µg/kg	10	NONE	-		
o,p-DDT	µg/kg	10	NONE	-		
o,p-TDE (o,p-DDD)	µg/kg	10	NONE	-		
p,p-DDE	µg/kg	10	NONE	-		
p,p-DDT	µg/kg	10	NONE	-		
p,p-TDE (p,p-DDD)	µg/kg	10	NONE	-		
Trifluralin	µg/kg	10	NONE	-		

#### Organophosphorous pesticides

Azinphos-methyl	µg/kg	10	NONE	-		
Chlorfenvinphos I (cis)	µg/kg	10	NONE	-		
Chlorfenvinphos II (trans)	µg/kg	10	NONE	-		
Chlorfenvinphos-methyl	µg/kg	10	NONE	-		
Diazinon	µg/kg	10	NONE	-		
Dichlorvos	µg/kg	10	NONE	-		
Dimethoate	µg/kg	10	NONE	-		
E-mevinphos	µg/kg	10	NONE	-		
Z-mevinphos	µg/kg	10	NONE	-		
Fenitrothion	µg/kg	10	NONE	-		
Fenthion	µg/kg	10	NONE	-		
Malathion	µg/kg	10	NONE	-		
Parathion-ethyl	µg/kg	10	NONE	-		
Parathion-methyl	µg/kg	10	NONE	-		
Phorate	µg/kg	10	NONE	-		





#### Project / Site name: Lakeview Drive, Bicester

#### Your Order No: POR012937

Lab Sample Number		804173	804174	804175			
Sample Reference				TP101	TP101	TP102	
Sample Number				1	2	1	
Depth (m)				0.20-0.30	0.40-0.50	0.10-0.20	
Date Sampled				15/08/2017	15/08/2017	15/08/2017	
Time Taken				None Supplied	None Supplied	None Supplied	
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status				
General Inorganics							
рН	pH Units	N/A	ISO 17025	7.9	8.0	8.2	
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	
Sulphate as SO <sub>4</sub>	mg/l	0.1	ISO 17025	11	13	210	
Heavy Metals / Metalloids							
Arsenic (dissolved)	µg/l	1.1	ISO 17025	1.7	< 1.1	5.9	
Barium (dissolved)	µg/l	0.05	ISO 17025	9.9	5.5	19	
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	0.4	
Boron (dissolved)	µg/l	10	ISO 17025	94	70	300	
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.8	0.6	4.7	
Copper (dissolved)	µg/l	0.7	ISO 17025	23	22	42	
Lead (dissolved)	µg/l	1	ISO 17025	2.1	1.8	6.8	
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	
Nickel (dissolved)	µg/l	0.3	ISO 17025	4.2	1.5	4.2	
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	
Vanadium (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	7.7	
Zinc (dissolved)	µg/l	0.4	ISO 17025	10	9.9	12	





#### Project / Site name: Lakeview Drive, Bicester

\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
804157	TP101	1	0.20-0.30	Brown clay and sand with gravel and vegetation.
804158	TP101	2	0.40-0.50	Brown clay and sand with gravel.
804159	TP102	1	0.10-0.20	Brown gravelly sand with rubble and vegetation.
804160	TP102	2	0.40-0.50	Brown clay and sand.
804161	TP103	1	0.20-0.30	Brown clay and sand with gravel and brick.
804162	TP103	2	0.90-1.00	Brown clay and sand with vegetation.
804163	TP105	1	0.50-0.60	Brown clay and loam.
804164	TP106	1	0.10-0.20	Brown loam and clay with vegetation.
804165	TP107	2	0.50-0.60	Light brown sandy clay with gravel.
804166	TP114	1	0.10-0.20	Brown clay and loam with gravel and vegetation.
804167	TP114	5	1.00-1.20	Light brown gravelly sand.
804168	TP118	2	0.70-0.80	Light brown clay and sand.
804169	TP119	2	0.80-0.90	Light brown clay and sand with gravel.
804170	TP120	1	0.60-0.70	Light brown sand with gravel.
804171	TP121	1	0.10-0.20	Brown clay and loam with vegetation.
804172	TP125	1	0.40-0.50	Light brown clay and sand with gravel and vegetation.





Project / Site name: Lakeview Drive, Bicester

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	w	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BS EN 12457-1 (2:1) Leachate Prep	2:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-1.	L043-PL	w	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC- MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	w	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	w	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	w	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	w	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

Iss No 17-58244-1 Lakeview Drive, Bicester NTE2366

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Project / Site name: Lakeview Drive, Bicester

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP- OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP- OES.	L038-PL	D	MCERTS
TO - Organochlorine pesticides in soil	Determination of OCPs by extraction with hexane followed by GC-MS.	In-house method		W	NONE
TO - Organophosphorous pesticides in soil	Determination of OPPs by extraction with DCM followed by GC-MS.	In-house method		W	NONE
Total cyanide in leachate	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH2 (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom. For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture soil analytical results the terminated convincentially using the moisture content which is carried out at a maximum of 30oC. correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



# **APPENDIX 8**

# **GROUNDWATER CHEMICAL ANALYSIS RESULTS**



Luke Cross BWB Consulting Limited 5th Floor Waterfront House Nottingham NG2 3DQ



i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS

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## Analytical Report Number : 17-59704

Project / Site name:	Lakeview Drive, Bicester	Samples received on:	07/09/2017
Your job number:	NTE2366	Samples instructed on:	07/09/2017
Your order number:	POR013250	Analysis completed by:	13/09/2017
Report Issue Number:	1	Report issued on:	13/09/2017
Samples Analysed:	4 water samples		

Signed:

Rexona Rahman Reporting Manager For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Project / Site name: Lakeview Drive, Bicester

Lab Sample Number	812730	812731	812732	812733				
Sample Reference				BH103	BH105	BH101	BH102	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)	0.20-3.82	0.86-1.60	1.35-2.32	1.20-2.20				
Date Sampled				06/09/2017	06/09/2017	06/09/2017	06/09/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	7.3	7.5	7.2	
Electrical Conductivity at 20 °C	µS/cm	10	NONE	730	1100	910	1100	
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
Sulphate as SO₄	µg/l	45	ISO 17025	106000	301000	88400	168000	
Sulphate as SO₄	mg/l	0.045	ISO 17025	110	300	88	170	
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	430	400	210	300	
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	2.93	6.51	3.55	4.14	
Total Phenols       Total Phenols (monohydric)       µg/l       10				< 10	< 10	< 10	< 10	
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluorantnene	µg/I	0.01	150 17025	< 0.01	< 0.01	< 0.01	< 0.01	
	µg/i	0.01	150 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
	µg/i	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(gni)peryiene	µg/I	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Total PAH			•					
Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	< 0.16	< 0.16	< 0.16	





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR013250								
Lab Sample Number				812730	812731	812732	812733	
Sample Reference				BH103	BH105	BH101	BH102	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20-3.82	0.86-1.60	1.35-2.32	1.20-2.20	
Date Sampled				06/09/2017	06/09/2017	06/09/2017	06/09/2017	
Time Taken		-		None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	3.06	1.43	0.35	0.41	
Barium (dissolved)	µg/l	0.06	ISO 17025	43	67	34	47	
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	
Boron (dissolved)	µg/l	10	ISO 17025	1200	81	1100	390	
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	
Calcium (dissolved)	mg/l	0.012	ISO 17025	87	150	52	150	
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.7	< 0.2	< 0.2	
Copper (dissolved)	µg/l	0.5	ISO 17025	< 0.5	1.7	< 0.5	8.2	
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	5.6	< 0.2	< 0.2	
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	0.11	
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.2	5.0	0.9	2.6	
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	< 0.6	< 0.6	
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.5	1.6	0.2	
Zinc (dissolved)	µg/l	0.5	ISO 17025	< 0.5	1.7	< 0.5	2.5	

#### Petroleum Hydrocarbons

TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH2 (C6 - C10)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: Lakeview Drive, Bicester

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement.	In-house method	L031-PL	w	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	w	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L0102B-PL	w	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	NONE
TPH2 (Waters)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	w	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Luke Cross BWB Consulting Limited 5th Floor Waterfront House Nottingham NG2 3DQ



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## Analytical Report Number : 17-59706

Project / Site name:	Lakeview Drive, Bicester	Samples received on:	07/09/2017
Your job number:	NTE2366	Samples instructed on:	07/09/2017
Your order number:	POR013250	Analysis completed by:	13/09/2017
Report Issue Number:	1	Report issued on:	13/09/2017
Samples Analysed:	2 water samples		

Signed:

Rexona Rahman Reporting Manager For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Project / Site name: Lakeview Drive, Bicester

Your Order No: POR013250							
Lab Sample Number				812735	812736		
Sample Reference				BH108	BH104		
Sample Number	None Supplied	None Supplied					
Depth (m)	2.95-3.15	1.25-2.16					
Date Sampled				06/09/2017	06/09/2017		
Time Taken				None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
General Inorganics							
pH	pH Units	N/A	ISO 17025	7.2	7.2		
Electrical Conductivity at 20 °C	µS/cm	10	NONE	1300	960		
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10		
Sulphate as SO₄	µg/l	45	ISO 17025	633000	310000		
Sulphate as SO <sub>4</sub>	mg/l	0.045	ISO 17025	630	310		
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	150	840		
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	4.91	6.39		
Total Phenols Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10		
Speciated PAHs							
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01		
Total PAH							
Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	< 0.16		





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR013250							
Lab Sample Number				812735	812736		
Sample Reference				BH108	BH104		
Sample Number				None Supplied	None Supplied		
Depth (m)				2.95-3.15	1.25-2.16		
Date Sampled				06/09/2017	06/09/2017		
Time Taken			-	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Heavy Metals / Metalloids							
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.37	1.66		
Barium (dissolved)	µg/l	0.06	ISO 17025	62	86		
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1		
Boron (dissolved)	µg/l	10	ISO 17025	170	78		
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	< 0.02		
Calcium (dissolved)	mg/l	0.012	ISO 17025	300	190		
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0		
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.3	0.5		
Copper (dissolved)	µg/l	0.5	ISO 17025	1.8	1.2		
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.6		
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.16	0.05		
Nickel (dissolved)	µg/l	0.5	ISO 17025	3.4	31		
Selenium (dissolved)	µg/l	0.6	ISO 17025	5.5	< 0.6		
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.2	1.1		
Zinc (dissolved)	µg/l	0.5	ISO 17025	11	7.8		

#### Petroleum Hydrocarbons

TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10		
TPH2 (C6 - C10)	µg/l	10	ISO 17025	< 10	< 10		

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: Lakeview Drive, Bicester

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	w	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement.	In-house method	L031-PL	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	w	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, AI=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	w	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L0102B-PL	w	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	w	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	NONE
TPH2 (Waters)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom. For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH104		W	17-59706	812736	b	TPH2 (Waters)	L088-PL	b
BH108		W	17-59706	812735	b	TPH2 (Waters)	L088-PL	b



Luke Cross BWB Consulting Limited 5th Floor Waterfront House Nottingham NG2 3DQ



i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS

t: 01923 225404 f: 01923 237404 e: reception@i2analytical.com

e: luke.cross@bwbconsulting.com

## Analytical Report Number : 17-59709

Project / Site name:	Lakeview Drive, Bicester	Samples received on:	07/09/2017
Your job number:	NTE2366	Samples instructed on:	07/09/2017
Your order number:	POR013250	Analysis completed by:	14/09/2017
Report Issue Number:	1	Report issued on:	14/09/2017
Samples Analysed:	4 water samples		

Signed:

Dr Irma Doyle Senior Account Manager For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.





#### Project / Site name: Lakeview Drive, Bicester

Your Order No: POR013250								
Lab Sample Number				812746	812747	812748	812749	
Sample Reference				BH113	BH110	BH107	BH106	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.74-4.32	2.10-3.36	2.75-3.28	1.78-2.63	
Date Sampled				06/09/2017	06/09/2017	06/09/2017	06/09/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
			A					
Analytical Parameter	c	Lir det	St					
(Water Analysis)	nit	ect	atu					
(	01	g q	s					
			•					
• • •								
General Inorganics		N1/A	100 47005	7.2	7.0	7.1	7.1	
pn Electrical Conductivity at 20.8C	pH Units	N/A 10	150 17025	7.2	7.0	7.1	7.1	
	µ5/cm	10	INUINE	990 < 10	1900	1900	1000	
Sulphate as SO <sub>4</sub>	µg/l	45	ISO 17025	103000	1090000	949000	779000	
Sulphate as SO <sub>4</sub>	mg/l	0.045	ISO 17025	100	1100	950	780	
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	36	28	400	160	
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	3.22	5.09	7.23	2.86	
Total Phenois					1			
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
Speciated DAHe								
Nanhthalana		0.01	100 17025	< 0.01	< 0.01	< 0.01	< 0.01	
	µg/i	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	μg/1 μα/Ι	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluorene	ua/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/l	0.01	150 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)riuorantnene	µg/l	0.01	150 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	µg/i ua/l	0.01	130 17023 NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Dibenz(a,h)anthracene	ua/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
					•			
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	< 0.16	< 0.16	< 0.16	
Hannes Markella, C.Markella I.d.								
Heavy Metals / Metalloids		0.15	100 17025	1 20	2.04	1 20	0.02	
Barium (dissolved)	µg/i	0.15	ISO 17025	49	97	1.20	30	
Bervllium (dissolved)	ua/l	0.00	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	
Boron (dissolved)	ua/l	10	ISO 17025	150	400	540	240	
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.04	< 0.02	0.02	0.03	
Calcium (dissolved)	mg/l	0.012	ISO 17025	160	480	400	380	
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.2	0.7	< 0.2	
Copper (dissolved)	µg/l	0.5	ISO 17025	1.5	5.5	2.4	1.1	
Lead (dissolved)	µg/l	0.2	150 17025	< 0.2	1.0	2.2	< 0.2	
Mercury (dissolved)	µg/I	0.05	150 17025	< 0.05	< 0.05	< 0.05	< 0.05	
Selenium (dissolved)	μg/I	0.5	150 17025	4.4 1 Q	11	1.4	80	
Vanadium (dissolved)	μg/1 μα/Ι	0.0	ISO 17025	0.6	0.4	19	< 0.0	
Zinc (dissolved)	р9/ч Ца/I	0.5	ISO 17025	2.0	2.6	7.6	4.0	
	- 31 -							<u>.</u>
Petroleum Hydrocarbons								
TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
					· -			
1PH2 (C6 - C10)	ua/l	10	ISO 17025	< 10	< 10	< 10	< 10	4

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: Lakeview Drive, Bicester

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement.	In-house method	L031-PL	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L0102B-PL	w	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	NONE
TPH2 (Waters)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom. For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



# **APPENDIX 9**

# **GEOTECHNICAL LABORATORY TESTING RESULTS**

Client: Client Address:	TEST CERTIFICATE       i2 Analytical Ltd         Determination of Liquid and Plastic Limits       7 Woodshots Meadow         Croxley Green Business Park       Croxley Green Business Park         Watford Herts WD18 8YS       Entertion         BWB Consulting Limited       Client Reference: NTE2366         Ss:       5th Floor         Waterfront House       Job Number: 17-58424         Nottingham       Date Sampled: Not Given         NG2 3DQ       Date Received: 17/08/2017										bontal Science		
Contact: Site Name: Site Address:	Jact:Luke CrossDate Tested: 31/08/2017Name:Lakeview Drive, BicesterSampled By: Not GivenAddress:Not GivenSampled By: Not Given												
TEST RESUL Description: Location: Sample Prepara	TS Brown BH106 ation:	La sandy very o Tested afte	boratory   Sample   gravelly C er washing	Referen Referen CLAY g to rem	ce: ce: love >4;	805393 Not Given 25um				San Dept Depth	nple Typ h Top [rr Base [rr	e: B n]: 0.50 n]: 1.00	
As Received Content	Moisture [%]	Liqu	id Limit 1%]		Pla	stic Limit		Plastic	city Ind [%]	dex	% Pa BS	SSING 4	25µm ieve
22	• •		71			31			40			49	
- 100 90 - 80 - 70 - 50 - 30 - 10 - 10 - 0 - 0 -	) 10	CL CL 20 30 Legend, based C Clay M Silt	CI MI 40 on BS 5930	50 2:2015 Coc P L H H V E O	CH MH 60 L de of pract lasticity Low Med High Very Extre appe	CV 80539: MV 80539: MV 70 80 IQUID LIMI ice for site inve um high emely high and to classifica	3 90 T estigations	CE ME 100 Liquid I below 3 35 to 50 50 to 70 70 to 90 exceed	110 	120	130 1	L40 15	0

Approved:

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section Date Reported:

Ristuli

07/09/2017

Signed:

Sushil Sharda Technical Manager (Geotechnical Division)

Schorth

for and on behalf of i2 Analytical Ltd

	Deteri	<u>TES</u> mination	OT CE	RTIF uid a	ICA and P	E lastic Li	mits	i2 An 7 Wo Croxi Watfe	alytical oodshot ley Gre ord Hei	Ltd ts Meado en Busir rts WD1	ow ness Pai 8 8YS	rk Environ	mental Science
4041 Client: Client Address: Contact: Site Name: Site Address:	Tested in A BWB ( 5th Flo Water Notting NG2 3 Luke ( Lakevi Not Gi	Accordance wi Consulting Lin For Tront House gham DQ Cross ew Drive, Bio ven	): Clause	Point Me	Method Client Reference: NTE2366 Job Number: 17-58424 Date Sampled: Not Given Date Received: 17/08/2017 Date Tested: 31/08/2017 Sampled By: Not Given								
TEST RESUL Description: Location: Sample Prepara	TS Dark b BH106 ation:	Lal rown CLAY Tested in n	ooratory Sample	Referer Referer ndition	nce: nce:	805394 Not Given				San Dept Depth	nple Typ h Top [n Base [n	be: B n]: 1.20 n]: 2.00	
As Received Content	Moisture	Liqui	d Limit %]		Pla	istic Limit		Plasti	city In [%]	dex	% Pa BS	assing 4 6 Test S	425µm Sieve
41			70		29				41			100	
<ul> <li>100</li> <li>90</li> <li>80</li> <li>70</li> <li>60</li> <li>50</li> <li>40</li> <li>30</li> <li>20</li> <li>10</li> <li>10</li> <li>0</li> <li>0</li> <li>0</li> </ul>		C Clay M Silt	CI MI 40 000 BS 5930	50 50 50 F	CH MH 60 L de of prac Plasticity Low Med H High Very E Extra Very	CV 805394 NV 805394 NV 70 80 IQUID LIMIT tice for site investigation tice for site investigation	90 stigations	CE ME 100 Liquid below 35 to 5 50 to 7 70 to 9 exceed anic mate	110 Limit 35 00 00 ding 90 rrial ( eg 0	120	130	line	50

Approved:

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section Date Reported:

Pistuli

07/09/2017

Signed:

Sushil Sharda Technical Manager (Geotechnical Division)

Schorth

for and on behalf of i2 Analytical Ltd



## **TEST CERTIFICATE**

**Determination of Liquid and Plastic Limits** 

#### i2 Analytical Ltd 7 Woodshots Meadow Croxley Green Business Park Watford Herts WD18 8YS

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

Client:	BWB Consulting Limited	Client Reference: NTE2366
Client Address:	5th Floor	Job Number: 17-58424
	Waterfront House	Date Sampled: Not Given
	Nottingham NG2 3DQ	Date Received: 17/08/2017
Contact:	Luke Cross	Date Tested: 31/08/2017
Site Name: Site Address:	Lakeview Drive, Bicester Not Given	Sampled By: Not Given

### **TEST RESULTS**

805396 Laboratory Reference: Not Given Sample Reference: Mottled brown CLAY Sample Type: D Description: BH107 Location: Depth Top [m]: 2.00 Sample Preparation: Depth Base [m]: 2.45 Tested in natural condition





#### Remarks

Approved:

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section Date Reported:

Postuli

07/09/2017

Signed:

Sushil Sharda **Technical Manager** (Geotechnical Division)

Short

for and on behalf of i2 Analytical Ltd

		TES	ST CEI	RTIF	ICAT	E		i2 Ar 7 Wo	nalytical podshot	Ltd s Meado	ow December 1		Ŀ
	<u>Deterr</u>	nination	of Liq	<u>uid a</u>	nd Pl	astic I	<u>_imits</u>	Watf	ord Her	en Busir ts WD18	iess Par 8 8YS	K	montal Science
TESTING 4041	Tested in A	ccordance wi	th BS1377-	-2: 1990	: Clause	4.4 & 5: Or	ne Point M	lethod					
Client: Client Address:	BWB Consulting LimitedClient Reference: NTE25th FloorJob Number: 17-58Waterfront HouseDate Sampled: Not GNottinghamDate Received: 17/08										NTE236 17-5842 Not Giv 17/08/2	66 24 en 017	
Contact: Site Name: Site Address:	NO2 SDQLuke CrossDate Tested: 31/08/2017Lakeview Drive, BicesterSampled By: Not GivenNot GivenSampled By: Not Given												
TEST RESUL	тѕ	Lal	ooratory F	Referen	ce:	805398 Not Give	n						
Description: Location: Sample Prepara	Dark b BH109 ation:	rown CLAY Tested in n	atural cor	ndition		Not Give				San Dept Depth	nple Typ h Top [n Base [n	e: D n]: 1.00 n]: 1.45	
As Received Content	Moisture [%]	Liqui I	d Limit %1		Plas	stic Limi	t	Plasti	icity In [%]	dex	% Pa BS	assing 4 Test Si	l25µm ieve
29	[]		67		29				38			100	
100 - 90 - 70 - 60 - 50 - 40 - 30 - 10 - 0 - 0 -	) 10	C Clay M Silt	CI MI 40 000 BS 5930:	50 2015 Cod PI L H V E O	CH MH 60 Llu le of practio asticity Low Mediu High Very h Extrer apper	CV 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805398 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805599 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805598 805590	90 IIT vestigations	CE ME 100	110 Limit 35 50 70 30 ding 90 erial ( eg C	120	130	line	50
Remarks													

Approved:

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section Date Reported:

Pistuli

07/09/2017

Signed:

Sushil Sharda Technical Manager (Geotechnical Division)

Schorth

for and on behalf of i2 Analytical Ltd

		TES	ST CER	TIFICA	<u>TE</u>		i2 Analytica 7 Woodsho	l Ltd ts Meade	ow Doce Par	<b>1</b>
	Detern	nination	of Liqu	id and	Plastic L	<u>.imits</u>	Watford He	rts WD1	8 8YS	Environmental Science
TESTING 4041	Tested in A	ccordance wi	th BS1377-2:	1990: Clau	se 4.4 & 5: On	e Point Me	thod			
Client: Client Address:	BWB C 5th Flo Waterfr Notting NG2 3I	onsulting Lir or ont House ham DQ	nited				Client Reference: NTE2366 Job Number: 17-58424 Date Sampled: Not Given Date Received: 17/08/2017			
Contact: Site Name: Site Address:	Luke C Lakevie Not Giv	ross ew Drive, Bic en	ester			Date Sam	Tested: pled By:	31/08/20 Not Give	)17 งา	
TEST RESUL	TS	Lat	ooratory Ref Sample Ref	ference: ference:	805399 Not Giver	า				
Description: Location: Sample Prepara	Dark br BH109 ation:	own CLAY Tested in n	atural condi	ition				Sar Dept Depth	nple Type h Top [m Base [m	): D ]: 2.00 ]: 2.45
As Received Content	Moisture [%]	Liqui آ	d Limit %1	P	lastic Limit	t	Plasticity Ir [%]	ndex	% Pa BS	ssing 425µm Test Sieve
30	1.01		72		29		43			100
100 - 90 - 80 - 70 - 60 - 50 - 40 - 20 - 10 - 0 - 0 -	) 10	CL CL CL 20 30 Legend, based of C Clay M Silt	CI MI 40 5 00 BS 5930:20	CH CH MH 60 60 15 Code of pr Plasticity L Ld I M H H V V E E O ap	CV 8053 MV 8053 805 805 805 805 805 805 805 805	99 99 , 90 IT estigations	CE ME 100 110 Liquid Limit below 35 35 to 50 50 to 70 70 to 90 exceeding 90 anic material ( eg	120	A 130 1	line 40 150
Remarks										

Approved:

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

Date Reported:

Ristuli

07/09/2017

Signed:

Sushil Sharda Technical Manager (Geotechnical Division)

Schorth

for and on behalf of i2 Analytical Ltd



Approved

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section Date Reported:

Postuli

07/09/2017

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Short

for and on behalf of i2 Analytical Ltd

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#### Page 1 of 1



Remarks

Approved

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

Date Reported:

Postuli

07/09/2017

Signed:

Sushil Sharda Technical Manager (Geotechnical Division)

Short

for and on behalf of i2 Analytical Ltd

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#### Remarks

Approved

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

Date Reported:

Postuli

07/09/2017

Signed:

Sushil Sharda **Technical Manager** (Geotechnical Division)

Short

for and on behalf of i2 Analytical Ltd

_ da		TES	ST CER	<b>TIFICA</b>	<u>re</u>	i2
(><)	Deterr	nination	of Liqui	d and F	 Plastic I imi	its <sup>Cr</sup>
	Deterr					<u>w</u>
4041	Tested in A	Accordance wi	th BS1377-2:	1990: Clause	e 4.4 & 5: One Poi	nt Method
Client: Client Address:	BWB C 5th Flo Waterf	Consulting Li or ront House	mited			
	Notting	ham				
Contonti	NG2 3I	DQ				
Site Name:	Lakevi	ew Drive. Bio	cester			
Site Address:	Not Giv	ven				
	rs	اما	horatory Ref	erence.	805411	
	10	Edi	Sample Ref	erence:	Not Given	
Description:	Mottleo	brown CLA	Y			
Location:	TP125					
Sample Prepara	ition:	Tested in n	atural condit	ion		
As Received	Moisture	Liqui	d Limit	Pla	astic Limit	Pla
Content	[%]		<u>%</u> ]		[%]	
30			80		28	
<sup>100</sup> T						<b>_</b>
90 -						
80						
80 -						
70 -						CE
J <sup>60</sup> -					_	
<b>GO</b> 50 -					CV 805	111
≤ 10						
				CH	MV	
<b>-</b> 30 <b>-</b>			СІ			
<b>H</b> 20						



Sample Type: D Depth Top [m]: 1.00 Depth Base [m]: 1.10

% Passing 425µm

**BS Test Sieve** 

100

A line

i2 Analytical Ltd 7 Woodshots Meadow Croxley Green Business Park Watford Herts WD18 8YS

Plasticity Index

[%]

52

CE

ME

100

Liquid Limit

below 35

35 to 50

50 to 70

70 to 90

exceeding 90

110

## Remarks

Approved:

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section Date Reported:

20

10

0 0

10

Piotuli

07/09/2017

Signed:

append to classification for organic material ( eg CHO )

Sushil Sharda Technical Manager (Geotechnical Division)

Schooth

120

130

150

140

for and on behalf of i2 Analytical Ltd

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GF 105.11

MH

60

Low

High

Medium

Very high

Extremely high

MI

50

Legend, based on BS 5930:2015 Code of practice for site investigations Plasticity

L

Т Н

V Е

0

40

CL

ML

30

Clay

Silt

Organic

20

С

Μ

80

LIQUID LIMIT

90

70

#### **TEST CERTIFICATE**

#### Summary of Classification Test Results

Client: Client Address:	BWB Consulting Limited 5th Floor Waterfront House
	NG2 3DQ
Contact:	Luke Cross
Site Name:	Lakeview Drive, Bicester
Site Address:	Not Given

#### i2 Analytical Ltd 7 Woodshots Meadow Croxley Green Business Park Watford Herts WD18 8YS



Client Reference: NTE2366 Job Number: 17-58424 Date Sampled: Not Given Date Received: 17/08/2017 Date Tested: 31/08 - 01/09/2017 Sampled By: Not Given

# Test results

		Sample					Density		MC	Atterberg				DD
Laboratory Reference	Hole No.	Reference	Top depth [m]	Base depth [m]	Туре	Soil Description	bulk	dry	W/C	% Passing 425um	LL	PL	PI	PD
							Mg/m3	Mg/m3	%	%	%	%	%	Mg/m3
805393	BH106	Not Given	0.50	1.00	В	Brown sandy very gravelly CLAY			22	49	71	31	40	
805394	BH106	Not Given	1.20	2.00	В	Dark brown CLAY			41	100	70	29	41	
805395	BH107	Not Given	1.00	1.45	D	Dark brown CLAY			30					
805396	BH107	Not Given	2.00	2.45	D	Mottled brown CLAY			35	100	80	29	51	
805398	BH109	Not Given	1.00	1.45	D	Dark brown CLAY			29	100	67	29	38	
805399	BH109	Not Given	2.00	2.45	D	Dark brown CLAY			30	100	72	29	43	
805400	BH110	Not Given	0.40	0.90	В	Mottled Brown slightly sandy CLAY			19	100	47	19	28	
805401	BH110	Not Given	3.00	3.38	D	Dark brown slightly gravelly slightly sandy organic CLAY			82	92	54	24	30	
805402	BH112	Not Given	0.60	1.00	В	Brown slightly gravelly slightly sandy CLAY with rootlets			32	79	51	20	31	
805403	BH112	Not Given	2.00	2.45	D	Greyish brown CLAY			32					

Comments:

Approved:

Dariusz Piotrowski PL Laboratory Manager **Geotechnical Section** 

Date Reported: 07/09/2017

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Piotuli

Signed:

Shorta

Sushil Sharda Technical Manager (Geotechnical Division)

for and on behalf of i2 Analytical Ltd
#### TEST CERTIFICATE

#### Summary of Classification Test Results

Client: Client Address:	BWB Consulting Limited 5th Floor Waterfront House Nottingham
	NG2 3DQ
Contact:	Luke Cross
Site Name:	Lakeview Drive, Bicester
Site Address:	Not Given

#### i2 Analytical Ltd 7 Woodshots Meadow Croxley Green Business Park Watford Herts WD18 8YS



Client Reference: NTE2366 Job Number: 17-58424 Date Sampled: Not Given Date Received: 17/08/2017 Date Tested: 31/08 - 01/09/2017 Sampled By: Not Given

#### Sample Atterberg Densitv M/C PD Laboratory bulk dry Hole No. Soil Description % Passing 425um LL PL ΡI Top depth Base depth Reference Reference Туре [m] [m] Mg/m3 Mg/m3 % % % % % Mg/m3 805405 TP109 Not Given 1.80 1.90 D Dark brown slightly sandy CLAY 34 TP110 D 805406 Not Given 2.30 2.40 Dark grey CLAY 30 805411 TP125 Not Given 1.00 1.10 D Mottled brown CLAY 30 100 80 28 52

Comments:

Test results

Approved:

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

Date Reported: 07/09/2017

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Piotuli

Signed:

Short

Sushil Sharda Technical Manager (Geotechnical Division)

for and on behalf of i2 Analytical Ltd



Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

Postuli

Date Reported:

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The results included within the report are representative of the samples submitted for analysis.

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Sushil Sharda

**Technical Manager** 

(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

Tested in Accordance with BS1377.Part 2:1980, dause 8.2       Client:     BWB Consulting Limited Waterfront House Notingham NS2 3DQ     Client Reference: NTE2386 Job Number: 17:58424       Date Sampled:     Not Given     Date Reference: NTE2306       Contact:     Luke Cross     Date Reference: NTGW2017       Sample description:     Brownish grey very clayey very sandy GRAVEL.     Sample Reference: Not Given       Suppler:     Not Given     Sample Reference: Not Given       Suppler:     Not Given     Sample description:     Brownish grey very clayey very sandy GRAVEL.       Suppler:     Not Given     Sample Type: B     Depth Tog [m]; Not Given       Suppler:     Not Given     Sample Type: B     Depth Tog [m]; Not Given       Suppler:     Not Given     Sample Type: B     Depth Tog [m]; Not Given       Suppler:     Not Given     Sample Type: B     Depth Tog [m]; Not Given       Serving     Sample Type: B     Medum     Coarse     Fire     Medum     Coarse     Imm       Serving     Satistication     Satistication     Satistication     Satistication     Satistication       Satint     Satistication     S				Deter	<u>TES</u> mination	ST CER	TIFIC	ATE	Distr	ibutio	<u>on</u>	i2 Analy 7 Wood Croxley Watford	tical Ltd shots Meadov Green Busine Herts WD18	w ess Park 8YS	Environmental 8	Bcience
Client: BWB Consulting Limited Client Address: Br Floor Waterfront House Not 3200 Contact: Lakeview Drive, Bicaster Site Name: Lakeview Drive, Bicaster Site Address: Not Given TEST RESULTS Laboratory Reference: 805392 Sample description: Browing drive very cay very sandy GRAVEL Location: BH103 Supplier: Not Given Test Result S Supplier: Not Given Test Result S Sample description: Browing drive very cay drive very sandy GRAVEL Location: BH103 Supplier: Not Given Test Result S Sample description: Browing drive very cay drive very sandy GRAVEL Location: BH103 Supplier: Not Given Test Result S Sample description: Browing drive very cay drive very drive very cay drive very drive very cay drive very cay drive very cay drive very cay drive very drive very cay drive very cay drive very cay drive very drive very drive very drive very drive very drive very cay drive very dr	1	esting 4041		Tes	ted in Accordar	nce with BS	1377 <sup>.</sup> Pa	rt 2·199	0 cla	use 9.2						
Citefit deferse: Sh Floor Nottigham NG2 3DQ Contact: Luke Cross Sample description: Supplier: Not Given Supplier: Supplier: Not Given Supplier: Supplier: Not Given Supplier: Not Given Sup				100		ing Limito	d		0, 014	000 0.2		Client D	oforonoo, NT	E2266		
Other Hubbles Waterfront Husse Notingham Data Status   NG2 3DQ Data Received: 17/08/2017   Contact: Luke Cross Data Tested: 31/08/2017   Site Name: Lake Cross Data Tested: 31/08/2017   Site Address: Not Given Sampled By: Not Given   Sample description: Brownish grey very clayey very sandy GRAVEL Sample Reference: Not Given   Suppler: Not Given Depth Tage [m]: 30:0   CLAV Fine Medum Coarse   70 Image: Coarse Fine Medum   000 Out Out Prec   000 Out Out Image: Coarse   100 Out Image: Coarse Fine   000 Out Out Image: Coarse   100 Out Out Image: Coarse   100 Out Image: Coarse Image: Coarse   100 Out Out Image: Coarse Image: Coarse   100 Out Out Image: Coarse Image: Coarse   100 Out Image: Coarse Image: Coarse Image: Coarse   100 Out Image: Coarse Image: Coarse Image: Coarse   100 Out Image: Coarse Ima		ent.	droce		5th Floor		u						Numbor: 17	-58/2/		
Notingham NG2 3DQ Source Trively Construction Stel Name: Lakview Drive, Bicester Sampled Sectors Sampled Secto	Cili		uiess.		Waterfront Ho	ouse						Data	Sompled: No	t Given		
NG2 3DQ Contact: Luke Cross Bite Address: Not Given Site Address: Not Given Sample description: Brownish grey very clayey very sandy GRAVEL Sample Type: B Depth Top [m]: Not Given Depth Base [m]: 3.00 Coarse Fine Medium Coarse Fine Medium Coarse Fine Medium Coarse Coanse Coan					Nottingham							Dale				
Contact: Lukke Cross Date Testel: 3108/2217 Site Name: Lakeview Drive, Bicester Sampled By: Not Given TEST RESULTS Laboratory Reference: 805392 Sample description: Brownish grey very clayey very sandy GRAVEL Location: BH103 Supplier: Not Given CLAY Fine SULT CLAY Fine SULT CLAY Medium Coarse Fine Medium Coarse Fine Medium Coarse Coences (Striven) CLAY Fine SULT CLAY Fine SULT CLAY Fine SULT CLAY Fine SULT CLAY Fine SULT Coarse Fine Medium Coarse Fine Medium Coarse Coences (Striven) Sample description: Brownish grey very clayey very sandy GRAVEL CLAY Fine SULT CLAY Fine SULT CLAY Fine SULT CLAY Fine SULT CLAY Fine SULT Sample description: Brownish grey very clayey used GRAVEL Sample description: Brownish grey very claye used Grave Mit BS1377 unless noted be Sample description: Brownish grey very claye used GRAVEL Sample description: Brownish grey very claye used GRAVEL Sample description: Brownish grey very claye used GRAVEL Sample description: Brownish grey very clayet description: Brownish grey very c					NG2 3DQ							Date	Received: 17	/08/2017		
Site Name:     Lakewise Dires, Blocker     Sampled by: Not Given       TEST RESULTS     Laboratory Reference:     805392     Sample Reference:     Not Given       Supple:     Not Given     Sample description:     Brownish grey very clayey very sandy GRAVEL     Sample Reference:     Not Given       Supple:     Not Given     Depth Top [m]: Not Given     Depth Top [m]: Not Given     Depth Top [m]: Not Given       Supple:     Not Given     Sample description:     Brownish grey very clayey very sandy GRAVEL     Sample description:     Brownish grey very clayey very sandy GRAVEL       Supple:     Not Given     Sample description:     Brownish grey very clayey very sandy GRAVEL     Sample description:     Brownish grey very clayey very sandy GRAVEL       Supple:     Not Given     Supple:     Sample description:     Brownish grey very clayey very sandy GRAVEL     Sample description:     Brownish grey very clayey very sandy GRAVEL       Supple:     Supple:     Supple:     Supple:     Genetic sample:     Genetic sample:     Supple:     Su	Co	ntact:			Luke Cross	Discot						Dat	te Tested: 31	/08/2017		
State Address.     Worksen       Sample description:     Brownish grey very clayey very sandy GRAVEL.     Sample Reference: Not Given       Sample description:     Brownish grey very clayey very sandy GRAVEL.     Sample Type: B       Location:     BH103     Suppler:     Not Given       CLAY     Fire     Medium     Coarse     Fire       100     Fire     Medium     Coarse     Coarse     Coarse       70     Medium     Coarse     Fire     Medium     Coarse     Coarse       70     Medium     Coarse     Fire     Medium     Coarse	Site	e Nam	1e:		Lakeview Driv	/e, Biceste	ər					Sa	mpled By: No	t Given		
Sample description:     Envolvish grey very dayey very sandy GRAVEL     Sample description:     Brownish grey very dayey very sandy GRAVEL     Sample description:     Brownish grey very dayey very sandy GRAVEL     Sample description:     Brownish grey very dayey very sandy GRAVEL     Sample description:     Brownish grey very dayey very sandy GRAVEL     Sample description:     Sample description:     Brownish grey very dayey very sandy GRAVEL     Sample description:     Sample description:     Brownish grey very dayey very sandy GRAVEL     Sample description:     Sample description:     Brownish grey very dayey very sandy GRAVEL     Sample description:     Sample description:     Brownish grey very dayey very sandy GRAVEL     Sample description:     Sa	TE			2			nco.	80530	2			Sample P	eference: No	t Given		
Location:     BH103     Depth Top [m]: Not Given       Supplier:     Not Given     Depth Base [m]: 3.00       Image: CLAY     Fire     SAND     Carse     Fire     GRAVEL     CodeLES     BOULDERS       Image: Clay     Set (marking construction)     SAND     Carse     Fire     GRAVEL     CodeLES     BOULDERS       Image: Clay     Set (marking construction)     Set (marking construction)     CodeLES     BOULDERS       Image: Clay     Set (marking construction)     CodeLES     BOULDERS     CodeLES     BOULDERS       Image: Clay     Set (marking construction)     CodeLES     BOULDERS     CodeLES     BOULDERS       Image: Clay     Set (marking construction)       Image: Clay     Set (marking construction)     Set (marking construction)     Set (marking construction)     Set (marking construction)       Image: Clay     Set (marking construction)     Set (marking construction)     Set (marking construction)     Set (marking construction) <td>Sa</td> <td>mple (</td> <td>descrir</td> <td>otion:</td> <td>Brownisl</td> <td>h arev ver</td> <td>v clavev</td> <td>verv s</td> <td>∠ sandv</td> <td>GRAVE</td> <td>ΞL</td> <td>Sample N</td> <td>nole Type: B</td> <td></td> <td></td> <td></td>	Sa	mple (	descrir	otion:	Brownisl	h arev ver	v clavev	verv s	∠ sandv	GRAVE	ΞL	Sample N	nole Type: B			
Supplier:     Not Given     Depth Base [m]: 3.00 <u>CLAY</u> Fine     Modum     Coarse     Fine     Modum     Coarse	Loc	cation	:	BH10	3	. g. c) . c.	,,.,			0		Depti	h Top [m]: No	t Given		
Source     SILT     SAND     GRAVEL     COBBLES     BOLLDERS       100     Image: Classing in accordance with BS1377 unless noted be     Fine     Medium     Coarse     Fine     Medium     Coarse     BOLLDERS     BOLLDERS     BOLLDERS     BOLLDERS       100     Image: Classing in accordance with BS1377 unless noted be     Image: Classing in accordance with BS1377 unless noted be     Image: Classing in accordance with BS1377 unless noted be     Image: Classing in accordance with BS1377 unless noted be	Su	oplier:		Not G	liven							Depth	Base [m]: 3.0	00		
CLAY     Fine     Medium     Coarse     Fine     Medium     Coarse     BOUDERS       100     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90     90		-			SILT			SA	ND			GRA	VFI			-
No     No<			CLAY	Fine	Medium	Coarse	Fine	Mec	lium	Coarse		Fine Med	ium Coarse	COBBLES	BOULDERS	
Steving     Setting     Particle Size     Model		100 1									_					
Sieving     Sectimentation       125     100       125     100       125     100       125     100       125     100       10     10       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       10     100       11     10       10     100       11     10       10     100       11     10 <td></td> <td>90 -</td> <td></td>		90 -														
Sieving     Sedimentation       0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0																
Steving     Sedimentation       0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0		80 -									+					
Sector     Sector<		70 -		_							+					
Sieving     Sedimentation       0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0	% Di	60 -														
Signed     Solution     <	assir										1					
90   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40   40 <td< td=""><td>еЪ</td><td>50 -</td><td></td><td></td><td></td><td></td><td></td><td></td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	еЪ	50 -							_							
30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30   30 <td< td=""><td>ntag</td><td>40 -</td><td></td><td></td><td></td><td></td><td></td><td>_</td><td></td><td></td><td>+</td><td></td><td></td><td></td><td></td><td></td></td<>	ntag	40 -						_			+					
A     20     10     10     100     10       0.001     0.01     0.1     1     10     100     100       Particle Size mm       125     100     10     100     11       125     100     100     100     100     100       125     100     100     100     100     100     100       125     100     100     100     100     100     100     100       125     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100<	erce	30 -														
20     10     10     10     100     1       0.001     0.01     0.1     1     10     100     1       Particle Size mm       125     100     100     1     10     100     1       90     100     100     100     1433     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100     100	۵.															
10     0     0     10     0.1     1     10     100     1       Particle Size     mm       Sieving     Sedimentation     mn     Dry Mass of sample [g]:     1433       125     100     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0		20 -														
No.01     0.01     0.1     1     10     100     1       Particle Size mm       Particle Size     M     Particle Size     mm     Dry Mass of sample [g]:     1433       125     100     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0		10 -									+					
0.001 0.01 0.1 1 10 100 1   Particle Size mm   Particle Size M Passing mm   Particle Size 0 0 0 0   125 100 0 0   90 100 0 0 0   63 100 0 0   50 100 0 0   28 100 0 0   20 96 0 0   14 90 0 0   10 85 0 0   5 71 0 0   1.18 53 0 0   0.6 48 0 0   0.15 40 0 0   0.015 40 0 0   0.015 40 0 0		0														Шļ
Sieving     Sedimentation       Particle Size     mm       Particle Size     % Passing       Particle Size     % Passing       125     100       125     100       63     100       50     100       37.5     100       28     100       28     100       14     90       14     90       10     85       14     90       10     85       11     53       10     85       118     53       0.6     48       0.425     46       0.3     44       0.212     42       0.15     40       0.063     37		0.0	01		0.01		0.1			1		10		100		1000
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Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

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Date Reported:

07/09/2017

Signed:

Sushil Sharda Technical Manager (Geotechnical Division)

Shorta

for and on behalf of i2 Analytical Ltd

Page 1 of 1

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Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

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Page 1 of 1

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Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

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for and on behalf of i2 Analytical Ltd

(Geotechnical Division)

Sushil Sharda

**Technical Manager** 

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Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

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Sushil Sharda Technical Manager (Geotechnical Division)

Shorta

#### Page 1 of 1

for and on behalf of i2 Analytical Ltd

#### **TEST CERTIFICATE**

Point Load Strength Index Tests Summary of Results

Tested in Accordance with ISRM : 2007, pages 125-132

BWB Consulting Limited Client: Client Address: 5th Floor Waterfront House Nottingham NG2 3DQ Luke Cross Contact: Site Name: Lakeview Drive, Bicester Site Address: Not Given

#### Test results

			San	nple		Speci	men		Deal Trace	Test see l	Type SRM	lid		Dime	nsions		Force	lent r, De	Point Strengt	Load h Index	Parent a
Laboratory Reference	Hole No.	Reference	Depth Top [m]	Depth Base [m]	Туре	Reference	Depth [m]	Description	and Test condition	Type (D, A, I, B)	Direction (L, P or U)	Failure Va (Y/N)	Lne mm	W mm	Dps mm	Dps' mm	P	B Equiva B diamete	ls MPa	ls(50) MPa	Kemarks (including water content if measured)
805407	TP121	Not Given	3.20	3.35	В	1		Dark brown MUDSTONE	MUDSTONE	I	U	YES	77.2	100.9	50.0	32.0	1.5	64.1	0.37	0.41	Unable to carry out axial test due to sample dimensions
805407	TP121	Not Given	3.20	3.35	В	2		Dark brown MUDSTONE	MUDSTONE	I	U	YES	84.2	116.0	42.0	33.0	1.2	69.8	0.24	0.28	Unable to carry out diameter test due to sample dimensions
805409	TP122	Not Given	3.55	3.70	В	1		Dark brown MUDSTONE	MUDSTONE	Т	U	YES	61.6	71.6	26.0	18.0	0.9	40.5	0.56	0.51	Unable to carry out axial test due to sample dimensions
805409	TP122	Not Given	3.55	3.70	В	2		Dark brown MUDSTONE	MUDSTONE	Т	U	YES	67.2	118.2	36.0	16.0	0.5	49.1	0.22	0.21	Unable to carry out diameter test due to sample dimensions

Test Type D - Diametral, A - Axial, I - Irregular Lump, B - Block

D - Diametral, A - Axial, I - Irregular Lump Direction L - parallel to planes of weakness P - perpendicular to planes of weakness U - unknown or random

Dimensions Dps - Distance between platens ( platen separation ) Dps' - at failure ( see ISRM note 6)

Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P

Detailed legend for test and dimensions, based on ISRM, is shown above.

## Size factor, F = (De/50)0.45 for all tests.

#### Comments:

Approved:

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section Date Reported: 05/09/2017

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Diametral

D

Signed:

Sushil Sharda Technical Manager (Geotechnical Division)

Shorta

for and on behalf of i2 Analytical Ltd

i2 Analytical Ltd 7 Woodshots Meadow Croxley Green Business Park Watford Herts WD18 8YS



Client Reference: NTE2366 Job Number: 17-58424 Date Sampled: Not Given Date Received: 17/08/2017 Date Tested: 31/08/2017 Sampled By: Not Given



# APPENDIX 10 DERIVATION OF BWB GSAC



## BWB HUMAN HEALTH GENERIC QUANTITATIVE RISK ASSESSMENT (GQRA)

## Human Health Generic Screening Criteria

The Environment Agency published the revised CLEA framework for assessing the risk to human health from soil contamination in January 2009. The framework comprises a technical background document (EA, 2009a), toxicological assessment EA 2009b and CLEA spreadsheet model (EA 2009c). The new framework supersedes the 2002 CLEA model and subsequent briefing notes. The 2002 CLEA software and CLEA 2005 have also been withdrawn and all previously published Soil Guideline Values (SGV) have been withdrawn. The EA have issued revised SGVs for the following substances.

- Arsenic
- cadmium
- selenium
- benzene
- ethylbenzene
- xylene
- nickel
- toluene
- dioxins and dioxin like PCBS

- Phenol
- Mercury

In the absence of an SGV for a particular contaminant Generic assessment criteria have been generated by BWB using the CLEA framework. This is a similar approach to Generic screening criteria published by LQM/CIEH and CLAIRE/EIC.

The Statutory Guidance on Part IIa of the Environment Act was revised in 2012 and introduced the concept of characterising Land into 4 categories. Categories 1 and 2 were classed as "Contaminated Land" and Categories 3 and 4 as "not Contaminated Land". DEFRA commissioned a research project to develop Category 4 Screening Levels (C4SLs) which would be used to rapidly screen sites as not contaminated land. These values would be less conservative than SGVs or equivalent GSACs but still be strongly precautionary. In 2014 DEFRA published the framework for deriving C4SLs and C4SLs for six substances:

Arsenic Cadmium Chromium VI Lead Benzo(a)pyrene Benzene

The framework recommended changes to exposure parameters as well as introducing a new Health Criteria Value known as a "Low level of Toxicological Concern" (LLTC) This would be less conservative than the minimal risk approach used to derive TDIs and IDs under the 2009b CLEA framework.

In response LQM/CIEH published their third edition of Generic screening criteria for human health in January 2015. These were known and "Suitable for Use Levels" (S4ULs) and adopted the changes to exposure parameters that were developed under the Category 4 Screening Level methodology.



The report also reviewed toxicity information but adopted the minimal risk approach as set out in EA 2009b. This report presented revised data for some substances for which an SGV had been developed, therefore some of the existing SGVs have been superseded.

BWB have updated their GSACs to take into account the LQM/CIEH S4ULs and DEFRA C4SLs but have retained the CLEA exposure assumptions, the BWB GSACs represent the most conservative minimal risk approach.

The screening approach comprises tiered assessment of contaminant data against BWB GSACs in the first instance, then S4ULs and finally C4SLs if available.

## Conceptual Site Model

The standard exposure pathways and Conceptual Models for human exposure to contaminants for different site uses are set out in the updated technical background to the CLEA model (Environment Agency 2009a).

## Descriptive Conceptual Models (From Environment Agency 2009a)

### Residential

This generic scenario assumes a typical residential property consisting of a two-storey house built on a ground bearing slab with a private garden consisting of lawn, flower beds and a small fruit and vegetable patch. The occupants are assumed to be parents with young children, who make regular use of the garden area.

The key assumptions for BWB GSACs are

Critical receptor is a young female child (aged zero to six years old)

Exposure duration is six years

Exposure pathways include direct soil and indoor dust ingestion, consumption of homegrown produce, consumption of soil attached to home grown produce, skin contact with soils and indoor dusts, and inhalation of indoor and outdoor dust and vapours.

Soil type is a Sandy Loam with 1% organic matter

Building type is a two storey small terraced house

### Commercial/industrial

There are many different kinds of workplace and work-related activities. This generic scenario assumes a typical commercial or light industrial property consisting of a three storey building at which employees spend most time indoors and are involved in office based or relatively light physical work.

The key assumptions for BWB GSACs are

Critical receptor is a working female adult (aged 16 to 65 years)

Exposure duration is a working lifetime of 49 years

Exposure pathways include direct soil and indoor dust ingestion, skin contact with soils and dusts, and inhalation of dust and vapours.



Soil type is a Sandy Loam with 1% organic matter

Building type is a three storey office (post 1970) (Representative of new buildings)

The 2009a report identifies 10 potential exposure pathways by which contaminated soils may impact human health and also sets out which pathways are applicable for four standard land uses. The pathways for the residential and commercial end uses are shown below.

## Screening Criteria Modelling

The CLEA model version 1.06 has been used to calculate BWB GSACs. BWB have used the model to calculate Individual criteria for each relevant pathway so, for example, in a residential with vegetable uptake scenario we would need six individual criteria:-

- Ingestion of soil and dust
- Ingestion of contaminated vegetables and soil attached to vegetables
- Dermal contact indoors and outdoors
- Particulate dust inhalation indoors and outdoors
- Vapour inhalation indoors
- Vapour inhalation outdoors

The final overall assessment criteria is calculated by adding together the reciprocal of the individual criteria for each pathway, therefore if several of the individual criteria are of similar magnitude the final criteria may be substantially lower than the lowest individual criteria so that total exposure is below the respective health threshold.

 $1/GSAC = \sum 1/ASC_{ingestion} + 1/ASC_{inhalation} + 1/ASC_{dermal}$ 

By adopting this methodology BWB are able to provide a more flexible site specific approach to generic human health risk assessment.



## Pathway Selection - Generic Site Assessment Criteria

Pathway	Residential	Commercial / Industrial						
Ingestion of Soil	Yes	Yes						
Ingestion of site derived household dust	Yes	Yes						
Ingestion of contaminated homegrown Optional No								
produce								
Ingestion of soil attached to homegrown	Optional	No						
produce								
Dermal contact with Soil	Yes	Yes						
Dermal contact with site derived household	Yes	Yes						
dust								
Inhalation of fugitive soil dust	Yes	Yes						
Inhalation of fugitive site derived household dust	Yes	Yes						
Inhalation of vapours outside	Yes	Yes						
Inhalation of vapours inside	Yes	Yes						

## Health Criteria Values

The general hierarchy for selecting health criteria values is as follows:

- 1. EA / DEFRA TOX report
- 2. Other UK authoritative body e.g. Committee on toxicity, Food Standards Agency
- 3. EU authoritative body
- 4. Other EU body e.g. RIVM
- 5. Other US/International Body

In the absence of updated TOX reports which take into account the recommendations of EA report (2009b) TOX reports produced under the old regime have been used and GSACs will be updated accordingly as further authoritative information is issued.

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Residential Pathway Specific Assessment Sub Criteria derived May 2015 1% Organic Matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & dermal contact	Ingestion of Contaminated Vegetables and soil attached to vegetables	Particulate Dust Inhalation	Residential GSAC	Soil Saturation Limit
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	mg/kg	mg/kg
Arsenic	NR	NR	3.50E+01	4.29E+02	8.50E+01	3.24E+01	N/A
Barium	NR	NR	1.35E+03		4.25E+05	1.34E+03	N/A
Beryllium	NR	NR	1.56E+02	2.96E+03	1.21E+00	1.21E+00	N/A
Boron	NR	NR	1.08E+04	3.00E+02	3.65E+06	2.91E+02	N/A
Cadmium	NR	NR	1.21E+02	1.24E+01	1.27E+02	1.03E+01	N/A
Chromium III	NR	NR	1.98E+04	1.25E+06	6.37E+02	6.17E+02	N/A
Chromium VI	NR	NR	7.05E+01	1.22E+01	4.25E+00	4.25E+00	N/A
Copper	NR	NR	1.08E+04	3.54E+03	9.89E+03	2.10E+03	N/A
Lead						2.00E+02	N/A
Inorganic Mercury	NR	NR	5.71E+01	1.40E+02	2.55E+03	3.99E+01	N/A
Nickel	NR	NR	7.89E+02	1.64E+03	1.27E+02	1.27E+02	N/A
Selenium	NR	NR	4.31E+02	6.15E+02	1.36E+05	2.53E+02	N/A
Vanadium	NR	NR	1.17E+03	6.21E+02	1.03E+03	2.91E+02	N/A
Zinc	NR	NR	4.05E+04	4.13E+03	2.55E+07	3.74E+03	N/A
Cyanide (free)						4.30E+01	N/A
Cyanide (Complex)						2.13E+02	N/A
Phenol	3.43E+02	4.21E+05	6.56E+02	1.55E+02	3.22E+05	9.18E+01	4.16E+04
Benzene	2.69E-01	5.63E+03	2.58E+01	1.13E-01	5.95E+04	7.93E-02	1.22E+03
Toluene	6.38E+02	8.78E+06	1.98E+04	1.48E+02	5.92E+07	1.19E+02	8.69E+02
Ethylbenzene	5.86E+01	6.17E+05	8.88E+03	1.07E+02	3.11E+06	3.77E+01	5.18E+02
Total Xylene	5.57E+01	5.15E+05	1.60E+04	1.87E+02	2.28E+06	4.28E+01	4.78E+02
TPH (EC5-6) aliphatic	2.88E+01	2.41E+06	2.23E+05	4.90E+03	1.06E+08	2.86E+01	3.04E+02
TPH (>EC6-8) aliphatic	7.02E+01	3.76E+06	2.23E+05	1.53E+04	1.06E+08	6.99E+01	1.44E+02
TPH (>EC8-10) aliphatic	1.82E+01	4.61E+05	4.45E+03	2.17E+03	6.16E+06	1.80E+01	7.77E+01
TPH (>EC10-12) aliphatic	9.02E+01	1.03E+06	4.45E+03	1.67E+04	6.16E+06	8.79E+01	4.75E+01

Residential Pathway Specific Assessment Sub Criteria derived May 2015 1% Organic Matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & dermal contact	Ingestion of Contaminated Vegetables and soil attached to vegetables	Particulate Dust Inhalation	Residential GSAC	Soil Saturation Limit
TPH (>EC12-16) aliphatic	7.55E+02	2.97E+06	4.45E+03	2.32E+05	6.16E+06	6.43E+02	2.37E+01
TPH (>EC16-35) aliphatic	8.91E+04	8.47E+07	8.91E+04	1.15E+07	4.25E+07	4.43E+04	8.48E+00
TPH (>EC35-44) aliphatic	8.91E+04	8.47E+07	8.91E+04	1.15E+07	4.25E+07	4.43E+04	8.48E+00
TPH (>EC6-7) aromatic (benzene)	2.69E-01	5.63E+03	2.58E+01	1.13E-01	5.95E+04	7.93E-02	1.22E+03
TPH (>EC7-8) aromatic (toluene)	6.26E+02	8.62E+06	1.98E+04	1.48E+02	5.81E+07	1.19E+02	8.69E+02
TPH (>EC8-10) aromatic	3.22E+01	2.79E+05	1.78E+03	5.73E+01	1.28E+06	2.04E+01	6.13E+02
TPH (>EC10-12) aromatic	1.75E+02	6.50E+05	1.78E+03	8.34E+01	1.28E+06	5.47E+01	3.64E+02
TPH (>EC12-16) aromatic	1.94E+03	2.15E+06	1.78E+03	1.52E+02	1.28E+06	1.31E+02	2.37E+01
TPH (>EC16-21) aromatic	3.54E+04	5.95E+06	1.34E+03	3.06E+02	6.38E+05	2.47E+02	5.37E+01
TPH (>EC21-35) aromatic	3.99E+06	2.67E+07	1.34E+03	2.66E+03	6.38E+05	8.90E+02	4.83E+00
TPH (>EC35-44) aromatic	3.99E+06	2.67E+07	1.34E+03	2.66E+03	6.38E+05	8.90E+02	4.83E+00
Naphthalene	1.64E+00	3.17E+04	1.58E+03	2.72E+01	2.93E+04	1.55E+00	7.64E+01
Acenaphthylene	3.27E+03	1.26E+07	4.85E+03	1.84E+02	2.55E+06	1.68E+02	8.61E+01
Acenaphthene	3.47E+03	1.32E+07	4.85E+03	2.28E+02	2.55E+06	2.05E+02	5.70E+01
Fluorene	4.37E+03	1.17E+07	3.23E+03	1.79E+02	1.70E+06	1.63E+02	3.09E+01
Phenanthrene	5.09E+03	6.29E+06	1.00E+03	1.03E+02	5.30E+05	9.17E+01	3.60E+01
Anthracene	1.09E+05	1.48E+08	2.43E+04	2.55E+03	1.27E+07	2.26E+03	1.17E+00
Fluoranthene	2.84E+04	1.26E+07	1.01E+03	3.49E+02	5.31E+05	2.57E+02	1.89E+01
Pyrene	6.50E+04	2.87E+07	2.42E+03	7.43E+02	1.27E+06	5.63E+02	2.20E+00
Benzo(a)anthracene	2.40E+01	3.37E+03	1.25E+01	2.11E+01	6.37E+01	5.41E+00	1.71E+00
Chrysene	2.53E+02	5.87E+03	2.51E+01	2.90E+01	1.27E+02	1.16E+01	4.40E-01
Benzo(b)fluoranthene	9.32E+01	1.05E+03	3.15E+00	7.43E+00	1.61E+01	1.90E+00	1.22E+00
Benzo(k)fluoranthene	4.04E+03	3.28E+04	8.33E+01	2.85E+02	4.25E+02	5.51E+01	6.87E-01
Benzo(a)pyrene	1.04E+02	9.12E+02	2.51E+00	7.36E+00	1.27E+01	1.60E+00	9.11E-01
Indeno(123-cd)pyrene	8.78E+02	1.10E+04	3.58E+01	6.93E+01	1.83E+02	2.04E+01	6.14E-02
Dibenzo(ah)anthracene	5.23E+00	1.13E+02	2.51E-01	1.11E+00	1.27E+00	1.70E-01	3.93E-03

Residential Pathway Specific Assessment Sub Criteria derived May 2015 1% Organic Matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & dermal contact	Ingestion of Contaminated Vegetables and soil attached to vegetables	Particulate Dust Inhalation	Residential GSAC	Soil Saturation Limit
Benzo(g,h,i)perylene	2.34E+04	1.83E+05	2.78E+02	2.77E+03	1.40E+03	2.12E+02	1.54E-02
Tetrachloroethene (PCE)	1.26E-01	2.48E+04	4.92E+02	4.36E+00	2.34E+05	1.22E-01	4.24E+02
Trichloroethene (TCE)	1.21E-02	2.44E+03	4.45E+01	2.74E-01	2.42E+04	1.15E-02	1.54E+03
cis-1,2-Dichloroethene	1.20E-01	2.33E+04	4.82E+02	1.75E+00	2.30E+05	1.12E-01	3.94E+03
Vinyl Chloride (VC)	5.43E-04	3.59E+02	1.25E+00	3.70E-03	1.27E+04	4.73E-04	1.36E+03
1,1,2,2-Tetrachloroethane (PCA)	2.76E+00	1.17E+05	5.07E+02	2.72E+00	2.41E+05	1.37E+00	2.67E+03
1,1,1-Trichloroethane (TCA)	6.33E+00	1.79E+06	5.34E+04	3.22E+02	2.46E+07	6.21E+00	1.43E+03
1,2-Dichloroethane	6.46E-03	8.09E+02	1.07E+01	3.07E-02	5.10E+03	5.33E-03	3.41E+03
Carbon Tetrachloride	1.81E-02	5.07E+03	5.38E+02	3.00E+00	6.93E+04	1.80E-02	1.52E+03
Carbon disulphide	1.01E-01	3.42E+04	3.55E+02	3.20E+01	6.08E+05	1.01E-01	2.11E+03

Residential Pathway Specific Assessment Sub Criteria derived May 2015 2.5% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & dermal contact	Ingestion of Contaminated Vegetables and soil attached to vegetables	Particulate Dust Inhalation	Residential GSAC	Soil Saturation Limit
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	mg/kg	mg/kg
Arsenic	NR	NR	3.50E+01	4.29E+02	8.50E+01	3.24E+01	N/A
Barium	NR	NR	1.35E+03		4.25E+05	1.34E+03	N/A
Beryllium	NR	NR	1.56E+02	2.96E+03	1.21E+00	1.21E+00	N/A
Boron	NR	NR	1.08E+04	3.00E+02	3.65E+06	2.91E+02	N/A
Cadmium	NR	NR	1.21E+02	1.24E+01	1.27E+02	1.03E+01	N/A
Chromium III	NR	NR	1.98E+04	1.25E+06	6.37E+02	6.17E+02	N/A
Chromium VI	NR	NR	7.05E+01	1.22E+01	4.25E+00	4.25E+00	N/A
Copper	NR	NR	1.08E+04	3.54E+03	9.89E+03	2.10E+03	N/A
Lead						2.00E+02	N/A
Inorganic Mercury	NR	NR	5.71E+01	1.40E+02	2.55E+03	3.99E+01	N/A
Nickel	NR	NR	7.89E+02	1.64E+03	1.27E+02	1.27E+02	N/A
Selenium	NR	NR	4.31E+02	6.15E+02	1.36E+05	2.53E+02	N/A
Vanadium	NR	NR	1.17E+03	6.21E+02	1.03E+03	2.91E+02	N/A
Zinc	NR	NR	4.05E+04	4.13E+03	2.55E+07	3.74E+03	N/A
Cyanide (free)						4.30E+01	N/A
Cyanide (Complex)						2.13E+02	N/A
Phenol	5.39E+02	5.28E+05	6.56E+02	2.88E+02	3.22E+05	1.46E+02	8.15E+04
Benzene	4.99E-01	7.68E+03	2.58E+01	2.30E-01	5.95E+04	1.57E-01	2.26E+03
Toluene	1.41E+03	1.30E+07	1.98E+04	3.41E+02	5.92E+07	2.71E+02	1.92E+03
Ethylbenzene	1.37E+02	9.44E+05	8.88E+03	2.58E+02	3.11E+06	8.88E+01	1.22E+03
Total Xylene	1.31E+02	7.89E+05	1.60E+04	4.50E+02	2.28E+06	1.01E+02	1.12E+03
TPH (EC5-6) aliphatic	5.28E+01	3.26E+06	2.23E+05	1.14E+04	1.06E+08	5.25E+01	5.58E+02
TPH (>EC6-8) aliphatic	1.57E+02	5.62E+06	2.23E+05	3.75E+04	1.06E+08	1.56E+02	3.22E+02
TPH (>EC8-10) aliphatic	4.44E+01	7.20E+05	4.45E+03	5.38E+03	6.16E+06	4.36E+01	1.90E+02

Residential Pathway Specific Assessment Sub Criteria derived May 2015 2.5% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & dermal contact	Ingestion of Contaminated Vegetables and soil attached to vegetables	Particulate Dust Inhalation	Residential GSAC	Soil Saturation Limit
TPH (>EC10-12) aliphatic	2.24E+02	1.62E+06	4.45E+03	4.00E+04	6.16E+06	2.12E+02	1.18E+02
TPH (>EC12-16) aliphatic	1.89E+03	4.69E+06	4.45E+03	3.64E+05	6.16E+06	1.32E+03	5.91E+01
TPH (>EC16-35) aliphatic	2.23E+05	1.34E+08	8.91E+04	1.16E+07	4.25E+07	6.32E+04	2.12E+01
TPH (>EC35-44) aliphatic	2.23E+05	1.34E+08	8.91E+04	1.16E+07	4.25E+07	6.32E+04	2.12E+01
TPH (>EC6-7) aromatic (benzene)	4.99E-01	7.68E+03	2.58E+01	2.30E-01	5.95E+04	1.56E-01	2.26E+03
TPH (>EC7-8) aromatic (toluene)	1.38E+03	1.28E+07	1.98E+04	3.41E+02	5.81E+07	2.70E+02	1.92E+03
TPH (>EC8-10) aromatic	7.88E+01	4.36E+05	1.78E+03	1.42E+02	1.28E+06	4.93E+01	1.50E+03
TPH (>EC10-12) aromatic	4.34E+02	1.02E+06	1.78E+03	2.07E+02	1.28E+06	1.30E+02	8.99E+02
TPH (>EC12-16) aromatic	4.83E+03	3.39E+06	1.78E+03	3.79E+02	1.28E+06	2.93E+02	5.91E+01
TPH (>EC16-21) aromatic	8.83E+04	9.40E+06	1.34E+03	7.61E+02	6.38E+05	4.82E+02	1.34E+02
TPH (>EC21-35) aromatic	9.98E+06	4.23E+07	1.34E+03	6.50E+03	6.38E+05	1.11E+03	1.21E+01
TPH (>EC35-44) aromatic	9.98E+06	4.23E+07	1.34E+03	6.50E+03	6.38E+05	1.11E+03	1.21E+01
Naphthalene	3.93E+00	4.91E+04	1.58E+03	6.63E+01	2.93E+04	3.70E+00	1.83E+02
Acenaphthylene	8.06E+03	1.97E+07	4.85E+03	4.56E+02	2.55E+06	3.96E+02	2.12E+02
Acenaphthene	8.57E+03	2.07E+07	4.85E+03	5.67E+02	2.55E+06	4.79E+02	1.41E+02
Fluorene	1.08E+04	1.84E+07	3.23E+03	4.45E+02	1.70E+06	3.77E+02	7.65E+01
Phenanthrene	1.27E+04	9.91E+06	1.00E+03	2.57E+02	5.30E+05	2.01E+02	8.96E+01
Anthracene	2.70E+05	2.33E+08	2.43E+04	6.34E+03	1.27E+07	4.93E+03	2.91E+00
Fluoranthene	7.08E+04	2.00E+07	1.01E+03	8.68E+02	5.31E+05	4.63E+02	4.73E+01
Pyrene	1.62E+05	4.54E+07	2.42E+03	1.85E+03	1.27E+06	1.04E+03	5.49E+00
Benzo(a)anthracene	6.00E+01	5.32E+03	1.25E+01	5.18E+01	6.37E+01	7.60E+00	4.28E+00
Chrysene	6.32E+02	9.28E+03	2.51E+01	7.15E+01	1.27E+02	1.58E+01	1.10E+00
Benzo(b)fluoranthene	2.33E+02	1.66E+03	3.15E+00	1.81E+01	1.61E+01	2.28E+00	3.04E+00
Benzo(k)fluoranthene	1.01E+04	5.19E+04	8.33E+01	6.87E+02	4.25E+02	6.27E+01	1.72E+00
Benzo(a)pyrene	2.61E+02	1.44E+03	2.51E+00	1.78E+01	1.27E+01	1.86E+00	2.28E+00
Indeno(123-cd)pyrene	2.20E+03	1.74E+04	3.58E+01	1.70E+02	1.83E+02	2.51E+01	5.30E-01

Residential Pathway Specific Assessment Sub Criteria derived May 2015 2.5% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & dermal contact	Ingestion of Contaminated Vegetables and soil attached to vegetables	Particulate Dust Inhalation	Residential GSAC	Soil Saturation Limit
Dibenzo(ah)anthracene	1.31E+01	1.79E+02	2.51E-01	2.65E+00	1.27E+00	1.91E-01	9.82E-03
Benzo(g,h,i)perylene	5.85E+04	2.89E+05	2.78E+02	6.27E+03	1.40E+03	2.23E+02	3.85E-02
Tetrachloroethene (PCE)	2.82E-01	3.71E+04	4.92E+02	1.02E+01	2.34E+05	2.74E-01	9.51E+02
Trichloroethene (TCE)	2.52E-02	3.53E+03	4.45E+01	6.09E-01	2.42E+04	2.42E-02	3.22E+03
cis-1,2-Dichloroethene	2.02E-01	3.02E+04	4.82E+02	3.35E+00	2.30E+05	1.90E-01	6.61E+03
Vinyl Chloride (VC)	7.02E-04	4.08E+02	1.25E+00	6.67E-03	1.27E+04	6.35E-04	1.76E+03
1,1,2,2-Tetrachloroethane (PCA)	5.65E+00	1.68E+05	5.07E+02	5.92E+00	2.41E+05	2.87E+00	5.46E+03
1,1,1-Trichloroethane (TCA)	1.29E+01	2.55E+06	5.34E+04	7.06E+02	2.46E+07	1.27E+01	2.92E+03
1,2-Dichloroethane	9.32E-03	9.72E+02	1.07E+01	5.56E-02	5.10E+03	7.98E-03	4.91E+03
Carbon Tetrachloride	3.97E-02	7.50E+03	5.38E+02	6.95E+00	6.93E+04	3.95E-02	3.32E+03
Carbon disulphide	2.02E-01	4.83E+04	3.55E+02	6.84E+01	6.08E+05	2.01E-01	4.21E+03

Residential Pathway Specific Assessment Sub Criteria derived May 2015 6% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & dermal contact	Ingestion of Contaminated Vegetables and soil attached to vegetables	Particulate Dust Inhalation	Residential GSAC	Soil Saturation Limit
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	mg/kg	mg/kg
Arsenic	NR	NR	3.50E+01	4.29E+02	8.50E+01	3.24E+01	N/A
Barium	NR	NR	1.35E+03		4.25E+05	1.34E+03	N/A
Beryllium	NR	NR	1.56E+02	2.96E+03	1.21E+00	1.21E+00	N/A
Boron	NR	NR	1.08E+04	3.00E+02	3.65E+06	2.91E+02	N/A
Cadmium	NR	NR	1.21E+02	1.24E+01	1.27E+02	1.03E+01	N/A
Chromium III	NR	NR	1.98E+04	1.25E+06	6.37E+02	6.17E+02	N/A
Chromium VI	NR	NR	7.05E+01	1.22E+01	4.25E+00	4.25E+00	N/A
Copper	NR	NR	1.08E+04	3.54E+03	9.89E+03	2.10E+03	N/A
Lead						2.00E+02	N/A
Inorganic Mercury	NR	NR	5.71E+01	1.40E+02	2.55E+03	3.99E+01	N/A
Nickel	NR	NR	7.89E+02	1.64E+03	1.27E+02	1.27E+02	N/A
Selenium	NR	NR	4.31E+02	6.15E+02	1.36E+05	2.53E+02	N/A
Vanadium	NR	NR	1.17E+03	6.21E+02	1.03E+03	2.91E+02	N/A
Zinc	NR	NR	4.05E+04	4.13E+03	2.55E+07	3.74E+03	N/A
Cyanide (free)						4.30E+01	N/A
Cyanide (Complex)						2.13E+02	N/A
Phenol	9.95E+02	7.17E+05	6.56E+02	5.72E+02	3.22E+05	2.34E+02	1.74E+05
Benzene	1.04E+00	1.11E+04	2.58E+01	4.98E-01	5.95E+04	3.32E-01	4.71E+03
Toluene	3.20E+03	1.97E+07	1.98E+04	7.89E+02	5.92E+07	6.13E+02	4.36E+03
Ethylbenzene	3.22E+02	1.44E+06	8.88E+03	6.09E+02	3.11E+06	2.06E+02	2.84E+03
Total Xylene	3.06E+02	1.21E+06	1.60E+04	1.06E+03	2.28E+06	2.34E+02	2.62E+03
TPH (EC5-6) aliphatic	1.09E+02	4.68E+06	2.23E+05	2.62E+04	1.06E+08	1.08E+02	1.15E+03
TPH (>EC6-8) aliphatic	3.59E+02	8.49E+06	2.23E+05	8.91E+04	1.06E+08	3.57E+02	7.36E+02
TPH (>EC8-10) aliphatic	1.06E+02	1.11E+06	4.45E+03	1.27E+04	6.16E+06	1.03E+02	4.51E+02

Residential Pathway Specific Assessment Sub Criteria derived May 2015 6% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & dermal contact	Ingestion of Contaminated Vegetables and soil attached to vegetables	Particulate Dust Inhalation	Residential GSAC	Soil Saturation Limit
TPH (>EC10-12) aliphatic	5.38E+02	2.51E+06	4.45E+03	8.76E+04	6.16E+06	4.77E+02	2.83E+02
TPH (>EC12-16) aliphatic	4.53E+03	7.27E+06	4.45E+03	4.67E+05	6.16E+06	2.23E+03	1.42E+02
TPH (>EC16-35) aliphatic	5.34E+05	2.07E+08	8.91E+04	1.17E+07	4.25E+07	7.57E+04	5.09E+01
TPH (>EC35-44) aliphatic	5.34E+05	2.07E+08	8.91E+04	1.17E+07	4.25E+07	7.57E+04	5.09E+01
TPH (>EC6-7) aromatic (benzene)	1.04E+00	1.11E+04	2.58E+01	4.98E-01	5.95E+04	3.32E-01	4.71E+03
TPH (>EC7-8) aromatic (toluene)	3.14E+03	1.93E+07	1.98E+04	7.89E+02	5.81E+07	6.11E+02	4.36E+03
TPH (>EC8-10) aromatic	1.88E+02	6.73E+05	1.78E+03	3.38E+02	1.28E+06	1.13E+02	3.58E+03
TPH (>EC10-12) aromatic	1.04E+03	1.58E+06	1.78E+03	4.95E+02	1.28E+06	2.82E+02	2.15E+03
TPH (>EC12-16) aromatic	1.16E+04	5.25E+06	1.78E+03	9.07E+02	1.28E+06	5.71E+02	1.42E+02
TPH (>EC16-21) aromatic	2.12E+05	1.46E+07	1.34E+03	1.81E+03	6.38E+05	7.66E+02	3.21E+02
TPH (>EC21-35) aromatic	2.39E+07	6.54E+07	1.34E+03	1.48E+04	6.38E+05	1.23E+03	2.90E+01
TPH (>EC35-44) aromatic	2.39E+07	6.54E+07	1.34E+03	1.48E+04	6.38E+05	1.23E+03	2.90E+01
Naphthalene	9.28E+00	7.55E+04	1.58E+03	1.57E+02	2.93E+04	8.71E+00	4.32E+02
Acenaphthylene	1.92E+04	3.05E+07	4.85E+03	1.09E+03	2.55E+06	8.50E+02	5.06E+02
Acenaphthene	2.05E+04	3.20E+07	4.85E+03	1.36E+03	2.55E+06	1.01E+03	3.36E+02
Fluorene	2.58E+04	2.85E+07	3.23E+03	1.06E+03	1.70E+06	7.74E+02	1.83E+02
Phenanthrene	3.03E+04	1.53E+07	1.00E+03	6.14E+02	5.30E+05	3.75E+02	2.14E+02
Anthracene	6.48E+05	3.60E+08	2.43E+04	1.52E+04	1.27E+07	9.21E+03	6.96E+00
Fluoranthene	1.70E+05	3.09E+07	1.01E+03	2.07E+03	5.31E+05	6.75E+02	1.12E+02
Pyrene	3.89E+05	7.03E+07	2.42E+03	4.40E+03	1.27E+06	1.55E+03	1.32E+01
Benzo(a)anthracene	1.44E+02	8.24E+03	1.25E+01	1.20E+02	6.37E+01	9.01E+00	1.03E+01
Chrysene	1.52E+03	1.44E+04	2.51E+01	1.67E+02	1.27E+02	1.84E+01	2.64E+00
Benzo(b)fluoranthene	5.59E+02	2.57E+03	3.15E+00	4.12E+01	1.61E+01	2.47E+00	7.29E+00
Benzo(k)fluoranthene	2.43E+04	8.03E+04	8.33E+01	1.53E+03	4.25E+02	6.63E+01	4.12E+00
Benzo(a)pyrene	6.27E+02	2.23E+03	2.51E+00	4.01E+01	1.27E+01	1.98E+00	5.46E+00
Indeno(123-cd)pyrene	5.27E+03	2.69E+04	3.58E+01	3.90E+02	1.83E+02	2.76E+01	3.68E-01

Residential Pathway Specific Assessment Sub Criteria derived May 2015 6% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & dermal contact	Ingestion of Contaminated Vegetables and soil attached to vegetables	Particulate Dust Inhalation	Residential GSAC	Soil Saturation Limit
Dibenzo(ah)anthracene	3.14E+01	2.78E+02	2.51E-01	5.77E+00	1.27E+00	2.01E-01	2.36E-02
Benzo(g,h,i)perylene	1.41E+05	4.48E+05	2.78E+02	1.24E+04	1.40E+03	2.27E+02	9.23E-02
Tetrachloroethene (PCE)	6.47E-01	5.61E+04	4.92E+02	2.38E+01	2.34E+05	6.29E-01	2.18E+03
Trichloroethene (TCE)	5.60E-02	5.25E+03	4.45E+01	1.39E+00	2.42E+04	5.38E-02	7.14E+03
cis-1,2-Dichloroethene	3.93E-01	4.22E+04	4.82E+02	6.91E+00	2.30E+05	3.72E-01	1.29E+04
Vinyl Chloride (VC)	1.07E-03	5.05E+02	1.25E+00	1.22E-02	1.27E+04	9.83E-04	2.69E+03
1,1,2,2-Tetrachloroethane (PCA)	1.24E+01	2.49E+05	5.07E+02	1.33E+01	2.41E+05	6.34E+00	1.20E+04
1,1,1-Trichloroethane (TCA)	2.84E+01	3.78E+06	5.34E+04	1.59E+03	2.46E+07	2.79E+01	6.39E+03
1,2-Dichloroethane	1.60E-02	1.27E+03	1.07E+01	1.06E-01	5.10E+03	1.39E-02	8.43E+03
Carbon Tetrachloride	8.99E-02	1.13E+04	5.38E+02	1.61E+01	6.93E+04	8.94E-02	7.54E+03
Carbon disulphide	4.37E-01	7.10E+04	3.55E+02	1.52E+02	6.08E+05	4.35E-01	9.11E+03

Commercial/Industrial Pathway Specific Assessment Sub Criteria derived May 2015 1% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	Commercial GSAC	Soil Saturation Limit
	(mg/kg)	(ma/ka)	(mg/kg)	(ma/ka)	(mg/kg)	ma/ka
Arsenic	NR	NR	6.35E+02	6.95E+02	6.40E+02	N/A
Barium	NR	NR	2.22E+04	3.48E+06	2.21E+04	N/A
Beryllium	NR	NR	3.97E+03	1.24E+01	1.24E+01	N/A
Boron	NR	NR	2.38E+05	2.99E+07	2.36E+05	N/A
Cadmium	NR	NR	3.99E+02	2.43E+02	2.30E+02	N/A
Chromium III	NR	NR	3.31E+05	9.09E+03	8.84E+03	N/A
Chromium VI	NR	NR	1.79E+03	3.48E+01	3.48E+01	N/A
Copper	NR	NR	1.89E+05	9.50E+04	6.33E+04	N/A
Lead					2.33E+03	N/A
Inorganic Mercury	NR	NR	1.18E+03	2.09E+04	3.60E+03	N/A
Nickel	NR	NR	2.22E+04	1.04E+03	1.04E+03	N/A
Selenium	NR	NR	1.23E+04	1.93E+06	1.30E+04	N/A
Vanadium	NR	NR	2.15E+04	9.58E+03	6.63E+03	N/A
Zinc	NR	NR	7.35E+05	2.09E+08	7.33E+05	N/A
Cyanide (free)					4.30E+01	N/A
Cyanide (Complex)					2.13E+02	N/A
Phenol	8.34E+04	1.09E+06	4.07E+04	3.28E+06	2.65E+04	4.16E+04
Benzene	2.97E+01	1.17E+04	5.53E+02	4.87E+05	2.81E+01	1.22E+03
Toluene	6.91E+04	1.83E+07	4.25E+05	4.86E+08	5.92E+04	8.69E+02
Ethylbenzene	6.28E+03	1.30E+06	1.91E+05	2.57E+07	6.05E+03	5.18E+02
Total Xylene	6.43E+03	1.17E+06	3.43E+05	2.03E+07	6.28E+03	4.78E+02
TPH (EC5-6) aliphatic	3.31E+03	5.01E+06	4.77E+06	8.69E+08	3.31E+03	3.04E+02
TPH (>EC6-8) aliphatic	8.06E+03	7.82E+06	4.77E+06	8.69E+08	8.04E+03	1.44E+02
TPH (>EC8-10) aliphatic	2.09E+03	9.59E+05	9.53E+04	5.04E+07	2.04E+03	7.77E+01
TPH (>EC10-12) aliphatic	1.04E+04	2.13E+06	9.53E+04	5.04E+07	9.33E+03	4.75E+01

Commercial/Industrial Pathway Specific Assessment Sub Criteria derived May 2015 1% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	Commercial GSAC	Soil Saturation Limit
TPH (>EC12-16) aliphatic	8.68E+04	6.18E+06	9.53E+04	5.04E+07	4.51E+04	2.37E+01
TPH (>EC16-35) aliphatic	1.02E+07	1.76E+08	1.91E+06	3.48E+08	1.59E+06	8.48E+00
TPH (>EC35-44) aliphatic	1.02E+07	1.76E+08	1.91E+06	3.48E+08	1.59E+06	8.48E+00
TPH (>EC6-7) aromatic (benzene)	4.75E+01	1.17E+04	5.53E+02	4.87E+05	4.36E+01	1.22E+03
TPH (>EC7-8) aromatic (toluene)	6.88E+04	1.83E+07	4.25E+05	4.84E+08	5.90E+04	8.69E+02
TPH (>EC8-10) aromatic	3.70E+03	5.80E+05	3.81E+04	1.04E+07	3.35E+03	6.13E+02
TPH (>EC10-12) aromatic	2.02E+04	1.35E+06	3.81E+04	1.04E+07	1.31E+04	3.64E+02
TPH (>EC12-16) aromatic	2.25E+05	4.48E+06	3.81E+04	1.04E+07	3.22E+04	2.37E+01
TPH (>EC16-21) aromatic	4.59E+06	1.24E+07	2.86E+04	5.22E+06	2.82E+04	5.37E+01
TPH (>EC21-35) aromatic	7.57E+08	5.56E+07	2.86E+04	5.22E+06	2.84E+04	4.83E+00
TPH (>EC35-44) aromatic	7.57E+08	5.56E+07	2.86E+04	5.22E+06	2.84E+04	4.83E+00
Naphthalene	2.06E+02	7.85E+04	3.64E+04	2.85E+05	2.04E+02	7.64E+01
Acenaphthylene	3.76E+05	2.62E+07	1.10E+05	2.09E+07	8.45E+04	8.61E+01
Acenaphthene	3.87E+05	2.74E+07	1.10E+05	2.09E+07	8.50E+04	5.70E+01
Fluorene	5.10E+05	2.44E+07	7.31E+04	1.39E+07	6.35E+04	3.09E+01
Phenanthrene	6.87E+05	1.31E+07	2.28E+04	4.34E+06	2.19E+04	3.60E+01
Anthracene	1.41E+07	3.07E+08	5.49E+05	1.04E+08	5.25E+05	1.17E+00
Fluoranthene	4.36E+06	2.63E+07	2.29E+04	4.34E+06	2.26E+04	1.89E+01
Pyrene	1.02E+07	5.98E+07	5.49E+04	1.04E+07	5.43E+04	2.20E+00
Benzo(a)anthracene	4.04E+03	7.01E+03	2.84E+02	5.21E+02	1.71E+02	1.71E+00
Chrysene	5.01E+04	1.22E+04	5.67E+02	1.04E+03	3.54E+02	4.40E-01
Benzo(b)fluoranthene	1.86E+04	2.18E+03	7.13E+01	1.32E+02	4.52E+01	1.22E+00
Benzo(k)fluoranthene	8.14E+05	6.83E+04	1.88E+03	3.48E+03	1.20E+03	6.87E-01
Benzo(a)pyrene	2.10E+04	1.90E+03	5.67E+01	1.04E+02	3.60E+01	9.11E-01
Indeno(123-cd)pyrene	1.75E+05	2.29E+04	8.10E+02	1.49E+03	5.12E+02	6.14E-02
Dibenzo(ah)anthracene	1.01E+03	2.36E+02	5.67E+00	1.04E+01	3.60E+00	3.93E-03
Benzo(g,h,i)perylene	4.64E+06	3.81E+05	6.29E+03	1.15E+04	4.02E+03	1.54E-02

Commercial/Industrial Pathway Specific Assessment Sub Criteria derived May 2015 1% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	Commercial GSAC	Soil Saturation Limit
Tetrachloroethene (PCE)	1.98E+01	7.63E+04	1.12E+04	2.83E+06	1.97E+01	4.24E+02
Trichloroethene (TCE)	1.31E+00	5.07E+03	9.53E+02	1.98E+05	1.30E+00	1.54E+03
cis-1,2-Dichloroethene	1.45E+01	5.26E+04	1.12E+04	2.04E+06	1.45E+01	3.94E+03
Vinyl Chloride (VC)	6.31E-02	7.47E+02	2.67E+01	1.04E+05	6.29E-02	1.36E+03
1,1,2,2-Tetrachloroethane (PCA)	2.98E+02	2.49E+05	1.10E+04	2.01E+06	2.90E+02	2.67E+03
1,1,1-Trichloroethane (TCA)	7.01E+02	3.81E+06	1.14E+06	2.07E+08	7.00E+02	1.43E+03
1,2-Dichloroethane	7.14E-01	1.68E+03	2.29E+02	4.17E+04	7.11E-01	3.41E+03
Carbon Tetrachloride	3.04E+00	1.65E+04	7.62E+03	8.85E+05	3.04E+00	1.52E+03
Carbon disulphide	1.16E+01	7.12E+04	9.53E+04	4.97E+06	1.16E+01	2.11E+03

Commercial/Industrial Pathway Specific Assessment Sub Criteria derived May 2015 2.5% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	Commercial GSAC	Soil Saturation Limit
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	mg/kg
Arsenic	NR	NR	6.35E+02	6.95E+02	6.40E+02	N/A
Barium	NR	NR	2.22E+04	3.48E+06	2.21E+04	N/A
Beryllium	NR	NR	3.97E+03	1.24E+01	1.24E+01	N/A
Boron	NR	NR	2.38E+05	2.99E+07	2.36E+05	N/A
Cadmium	NR	NR	3.99E+02	2.43E+02	2.30E+02	N/A
Chromium III	NR	NR	3.31E+05	9.09E+03	8.84E+03	N/A
Chromium VI	NR	NR	1.79E+03	3.48E+01	3.48E+01	N/A
Copper	NR	NR	1.89E+05	9.50E+04	6.33E+04	N/A
Lead					2.33E+03	N/A
Inorganic Mercury	NR	NR	1.18E+03	2.09E+04	3.60E+03	N/A
Nickel	NR	NR	2.22E+04	1.04E+03	1.04E+03	N/A
Selenium	NR	NR	1.23E+04	1.93E+06	1.30E+04	N/A
Vanadium	NR	NR	2.15E+04	9.58E+03	6.63E+03	N/A
Zinc	NR	NR	7.35E+05	2.09E+08	7.33E+05	N/A
Cyanide (free)					4.30E+01	N/A
Cyanide (Complex)					2.13E+02	N/A
Phenol	1.31E+05	1.37E+06	4.07E+04	3.28E+06	3.01E+04	8.15E+04
Benzene	5.53E+01	1.60E+04	5.53E+02	4.87E+05	5.01E+01	2.26E+03
Toluene	1.52E+05	2.72E+07	4.25E+05	4.86E+08	1.12E+05	1.92E+03
Ethylbenzene	1.47E+04	1.99E+06	1.91E+05	2.57E+07	1.36E+04	1.22E+03
Total Xylene	1.51E+04	1.79E+06	3.43E+05	2.03E+07	1.43E+04	1.12E+03
TPH (EC5-6) aliphatic	6.07E+03	6.79E+06	4.77E+06	8.69E+08	6.06E+03	5.58E+02
TPH (>EC6-8) aliphatic	1.80E+04	1.17E+07	4.77E+06	8.69E+08	1.79E+04	3.22E+02
TPH (>EC8-10) aliphatic	5.11E+03	1.50E+06	9.53E+04	5.04E+07	4.83E+03	1.90E+02
TPH (>EC10-12) aliphatic	2.58E+04	3.37E+06	9.53E+04	5.04E+07	2.02E+04	1.18E+02

Commercial/Industrial Pathway Specific Assessment Sub Criteria derived May 2015 2.5% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	Commercial GSAC	Soil Saturation Limit
TPH (>EC12-16) aliphatic	2.17E+05	9.77E+06	9.53E+04	5.04E+07	6.57E+04	5.91E+01
TPH (>EC16-35) aliphatic	2.56E+07	2.79E+08	1.91E+06	3.48E+08	1.76E+06	2.12E+01
TPH (>EC35-44) aliphatic	2.56E+07	2.79E+08	1.91E+06	3.48E+08	1.76E+06	2.12E+01
TPH (>EC6-7) aromatic (benzene)	5.53E+01	1.60E+04	5.53E+02	4.87E+05	5.01E+01	2.26E+03
TPH (>EC7-8) aromatic (toluene)	1.52E+05	2.71E+07	4.25E+05	4.84E+08	1.11E+05	1.92E+03
TPH (>EC8-10) aromatic	9.06E+03	9.08E+05	3.81E+04	1.04E+07	7.26E+03	1.50E+03
TPH (>EC10-12) aromatic	4.99E+04	2.13E+06	3.81E+04	1.04E+07	2.13E+04	8.99E+02
TPH (>EC12-16) aromatic	5.59E+05	7.06E+06	3.81E+04	1.04E+07	3.54E+04	5.91E+01
TPH (>EC16-21) aromatic	1.15E+07	1.96E+07	2.86E+04	5.22E+06	2.83E+04	1.34E+02
TPH (>EC21-35) aromatic	1.89E+09	8.79E+07	2.86E+04	5.22E+06	2.84E+04	1.21E+01
TPH (>EC35-44) aromatic	1.89E+09	8.79E+07	2.86E+04	5.22E+06	2.84E+04	1.21E+01
Naphthalene	4.93E+02	1.21E+05	3.64E+04	2.85E+05	4.84E+02	1.83E+02
Acenaphthylene	9.26E+05	4.11E+07	1.10E+05	2.09E+07	9.76E+04	2.12E+02
Acenaphthene	9.56E+05	4.31E+07	1.10E+05	2.09E+07	9.80E+04	1.41E+02
Fluorene	1.26E+06	3.84E+07	7.31E+04	1.39E+07	6.86E+04	7.65E+01
Phenanthrene	1.71E+06	2.07E+07	2.28E+04	4.34E+06	2.24E+04	8.96E+01
Anthracene	3.51E+07	4.84E+08	5.49E+05	1.04E+08	5.37E+05	2.91E+00
Fluoranthene	1.09E+07	4.16E+07	2.29E+04	4.34E+06	2.27E+04	4.73E+01
Pyrene	2.54E+07	9.45E+07	5.49E+04	1.04E+07	5.45E+04	5.49E+00
Benzo(a)anthracene	1.01E+04	1.11E+04	2.84E+02	5.21E+02	1.77E+02	4.28E+00
Chrysene	1.25E+05	1.93E+04	5.67E+02	1.04E+03	3.59E+02	1.10E+00
Benzo(b)fluoranthene	4.66E+04	3.45E+03	7.13E+01	1.32E+02	4.57E+01	3.04E+00
Benzo(k)fluoranthene	2.03E+06	1.08E+05	1.88E+03	3.48E+03	1.21E+03	1.72E+00
Benzo(a)pyrene	5.26E+04	3.00E+03	5.67E+01	1.04E+02	3.63E+01	2.28E+00
Indeno(123-cd)pyrene	4.38E+05	3.62E+04	8.10E+02	1.49E+03	5.17E+02	5.30E-01
Dibenzo(ah)anthracene	2.53E+03	3.73E+02	5.67E+00	1.04E+01	3.63E+00	9.82E-03
Benzo(g,h,i)perylene	1.16E+07	6.02E+05	6.29E+03	1.15E+04	4.03E+03	3.85E-02

Commercial/Industrial Pathway Specific Assessment Sub Criteria derived May 2015 2.5% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	Commercial GSAC	Soil Saturation Limit
Tetrachloroethene (PCE)	4.43E+01	1.14E+05	1.12E+04	2.83E+06	4.41E+01	9.51E+02
Trichloroethene (TCE)	2.74E+00	7.34E+03	9.53E+02	1.98E+05	2.73E+00	3.22E+03
cis-1,2-Dichloroethene	2.43E+01	6.81E+04	1.12E+04	2.04E+06	2.42E+01	6.61E+03
Vinyl Chloride (VC)	8.16E-02	8.50E+02	2.67E+01	1.04E+05	8.13E-02	1.76E+03
1,1,2,2-Tetrachloroethane (PCA)	6.11E+02	3.56E+05	1.10E+04	2.01E+06	5.78E+02	5.46E+03
1,1,1-Trichloroethane (TCA)	1.43E+03	5.46E+06	1.14E+06	2.07E+08	1.43E+03	2.92E+03
1,2-Dichloroethane	1.03E+00	2.02E+03	2.29E+02	4.17E+04	1.02E+00	4.91E+03
Carbon Tetrachloride	6.67E+00	2.44E+04	7.62E+03	8.85E+05	6.66E+00	3.32E+03
Carbon disulphide	2.32E+01	1.00E+05	9.53E+04	4.97E+06	2.32E+01	4.21E+03

Commercial/Industrial Pathway Specific Assessment Sub Criteria derived May 2015 6% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	Commercial GSAC	Soil Saturation Limit
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	ma/ka
Arsenic	NR	NR	6.35E+02	6.95E+02	6.40E+02	N/A
Barium	NR	NR	2.22E+04	3.48E+06	2.21E+04	N/A
Beryllium	NR	NR	3.97E+03	1.24E+01	1.24E+01	N/A
Boron	NR	NR	2.38E+05	2.99E+07	2.36E+05	N/A
Cadmium	NR	NR	3.99E+02	2.43E+02	2.30E+02	N/A
Chromium III	NR	NR	3.31E+05	9.09E+03	8.84E+03	N/A
Chromium VI	NR	NR	1.79E+03	3.48E+01	3.48E+01	N/A
Copper	NR	NR	1.89E+05	9.50E+04	6.33E+04	N/A
Lead					2.33E+03	N/A
Inorganic Mercury	NR	NR	1.18E+03	2.09E+04	3.60E+03	N/A
Nickel	NR	NR	2.22E+04	1.04E+03	1.04E+03	N/A
Selenium	NR	NR	1.23E+04	1.93E+06	1.30E+04	N/A
Vanadium	NR	NR	2.15E+04	9.58E+03	6.63E+03	N/A
Zinc	NR	NR	7.35E+05	2.09E+08	7.33E+05	N/A
Cyanide (free)					4.30E+01	N/A
Cyanide (Complex)					2.13E+02	N/A
Phenol	2.42E+05	1.86E+06	4.07E+04	3.28E+06	3.39E+04	1.74E+05
Benzene	1.15E+02	2.30E+04	5.53E+02	4.87E+05	9.47E+01	4.71E+03
Toluene	3.46E+05	4.11E+07	4.25E+05	4.86E+08	1.90E+05	4.36E+03
Ethylbenzene	3.45E+04	3.04E+06	1.91E+05	2.57E+07	2.89E+04	2.84E+03
Total Xylene	3.53E+04	2.74E+06	3.43E+05	2.03E+07	3.16E+04	2.62E+03
TPH (EC5-6) aliphatic	1.25E+04	9.74E+06	4.77E+06	8.69E+08	1.25E+04	1.15E+03
TPH (>EC6-8) aliphatic	4.12E+04	1.77E+07	4.77E+06	8.69E+08	4.08E+04	7.36E+02
TPH (>EC8-10) aliphatic	1.21E+04	2.31E+06	9.53E+04	5.04E+07	1.07E+04	4.51E+02
TPH (>EC10-12) aliphatic	6.18E+04	5.22E+06	9.53E+04	5.04E+07	3.72E+04	2.83E+02

Commercial/Industrial Pathway Specific Assessment Sub Criteria derived May 2015 6% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	Commercial GSAC	Soil Saturation Limit
TPH (>EC12-16) aliphatic	5.20E+05	1.51E+07	9.53E+04	5.04E+07	8.00E+04	1.42E+02
TPH (>EC16-35) aliphatic	6.14E+07	4.32E+08	1.91E+06	3.48E+08	1.83E+06	5.09E+01
TPH (>EC35-44) aliphatic	6.14E+07	4.32E+08	1.91E+06	3.48E+08	1.83E+06	5.09E+01
TPH (>EC6-7) aromatic (benzene)	1.15E+02	2.30E+04	5.53E+02	4.87E+05	9.48E+01	4.71E+03
TPH (>EC7-8) aromatic (toluene)	3.45E+05	4.09E+07	4.25E+05	4.84E+08	1.89E+05	4.36E+03
TPH (>EC8-10) aromatic	2.16E+04	1.40E+06	3.81E+04	1.04E+07	1.36E+04	3.58E+03
TPH (>EC10-12) aromatic	1.19E+05	3.29E+06	3.81E+04	1.04E+07	2.85E+04	2.15E+03
TPH (>EC12-16) aromatic	1.34E+06	1.09E+07	3.81E+04	1.04E+07	3.68E+04	1.42E+02
TPH (>EC16-21) aromatic	2.75E+07	3.03E+07	2.86E+04	5.22E+06	2.84E+04	3.21E+02
TPH (>EC21-35) aromatic	4.54E+09	1.36E+08	2.86E+04	5.22E+06	2.84E+04	2.90E+01
TPH (>EC35-44) aromatic	4.54E+09	1.36E+08	2.86E+04	5.22E+06	2.84E+04	2.90E+01
Naphthalene	1.16E+03	1.87E+05	3.64E+04	2.85E+05	1.11E+03	4.32E+02
Acenaphthylene	2.21E+06	6.35E+07	1.10E+05	2.09E+07	1.04E+05	5.06E+02
Acenaphthene	2.28E+06	6.67E+07	1.10E+05	2.09E+07	1.04E+05	3.36E+02
Fluorene	3.02E+06	5.94E+07	7.31E+04	1.39E+07	7.09E+04	1.83E+02
Phenanthrene	4.09E+06	3.20E+07	2.28E+04	4.34E+06	2.25E+04	2.14E+02
Anthracene	8.41E+07	7.50E+08	5.49E+05	1.04E+08	5.42E+05	6.96E+00
Fluoranthene	2.61E+07	6.44E+07	2.29E+04	4.34E+06	2.28E+04	1.12E+02
Pyrene	6.09E+07	1.46E+08	5.49E+04	1.04E+07	5.45E+04	1.32E+01
Benzo(a)anthracene	2.42E+04	1.72E+04	2.84E+02	5.21E+02	1.80E+02	1.03E+01
Chrysene	3.00E+05	2.99E+04	5.67E+02	1.04E+03	3.62E+02	2.64E+00
Benzo(b)fluoranthene	1.12E+05	5.34E+03	7.13E+01	1.32E+02	4.59E+01	7.29E+00
Benzo(k)fluoranthene	4.88E+06	1.67E+05	1.88E+03	3.48E+03	1.21E+03	4.12E+00
Benzo(a)pyrene	1.26E+05	4.65E+03	5.67E+01	1.04E+02	3.64E+01	5.46E+00
Indeno(123-cd)pyrene	1.05E+06	5.60E+04	8.10E+02	1.49E+03	5.20E+02	3.68E-01
Dibenzo(ah)anthracene	6.07E+03	5.78E+02	5.67E+00	1.04E+01	3.65E+00	2.36E-02
Benzo(g,h,i)perylene	2.78E+07	9.33E+05	6.29E+03	1.15E+04	4.04E+03	9.23E-02

Commercial/Industrial Pathway Specific Assessment Sub Criteria derived May 2015 &% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	Commercial GSAC	Soil Saturation Limit
Tetrachloroethene (PCE)	1.02E+02	1.73E+05	1.12E+04	2.83E+06	1.01E+02	2.18E+03
Trichloroethene (TCE)	6.07E+00	1.09E+04	9.53E+02	1.98E+05	6.03E+00	7.14E+03
cis-1,2-Dichloroethene	4.73E+01	9.50E+04	1.12E+04	2.04E+06	4.71E+01	1.29E+04
Vinyl Chloride (VC)	1.25E-01	1.05E+03	2.67E+01	1.04E+05	1.24E-01	2.69E+03
1,1,2,2-Tetrachloroethane (PCA)	1.34E+03	5.27E+05	1.10E+04	2.01E+06	1.19E+03	1.20E+04
1,1,1-Trichloroethane (TCA)	3.14E+03	8.08E+06	1.14E+06	2.07E+08	3.13E+03	6.39E+03
1,2-Dichloroethane	1.77E+00	2.65E+03	2.29E+02	4.17E+04	1.76E+00	8.43E+03
Carbon Tetrachloride	1.51E+01	3.67E+04	7.62E+03	8.85E+05	1.51E+01	7.54E+03
Carbon disulphide	5.01E+01	1.48E+05	9.53E+04	4.97E+06	5.01E+01	9.11E+03



# **APPENDIX** 11

# **CLEA FLOW CHART & SCREENING WORKSHEETS**



## Human Health Generic QRA Worksheet

NTE2366



lakeview Drive, Bicester

All samples have been assessed as one averageing area.

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GSAC Type (BWB, LQM S4UL, C4SL, Bespoke)	BWB_GSAC
Key Receptor/CSM (Residential/Commercial/POS)	Commercial
Organic Matter % (If unknown use 1%)	1

Exposure Pathway Selection for BWB GSAC	
(Residential/Commercial scenarios only)	
Soil Ingestion, dermal contact, particulate inhalation	TRUE
Ingestion of site grown vegetables and soil attached to	
vegetables	FALSE
Inhalation of vapours Indoors	TRUE
Inhalation of vapours Outdoors	TRUE

Default pathways				
Residential	Commercial			
TRUE	TRUE			
Optional	FALSE			
TRUE	TRUE			
TRUE	TRUE			

V5, March 2016

Generic Assessment Criteria		D\A/D
	~ · ·	DVVD
lakeview Drive, Bicester	Commercial	CONSULTANCY   ENVIRONMENT
NTE2366		Source
Arsenic	6.40E+02	BWB_GSAC
Barium	2.21E+U4	BWB_GSAC
Beryllium	1.24E+UI	BWB_GSAC
Boron	2.30E+U5	BWB_GSAC
	2.3UE+U2	BWB_GSAC
	3.41E+U1	BWB_GSAC
	9.09E+03	BWB_GSAC
Copper	0.33E+U4	BWB_GSAC
	2.33E+U3	DEFRA_045L
I norganic iviercury	3.6UE+U3	BWB_GSAC
	1.04E+03	BWB_GSAC
Selenium	1.30E+04	BWB_GSAC
Vanadium	6.63E+U3	BWB_GSAC
	1.33E+U5	BWB_GSAC
Cyanide (Free)	4.30E+01	BWB_GSAC
Cyanide (Complex)	2.13E+02	BWB_GSAC
Phenols (Iotal)	2.65E+U4	BWB_GSAC
Benzene	2.81E+01	BWB_GSAC
Toluene	5.92E+04	BWB_GSAC
Ethyl benzene	6.05E+03	BWB_GSAC
Total Xylene	6.28E+03	BWB_GSAC
TPH (EC5-6) aliphatic	3.31E+03	BWB_GSAC
TPH (>EC6-8) aliphatic	8.04E+03	BWB_GSAC
TPH (>EC8-10) aliphatic	2.04E+03	BWB_GSAC
TPH (>EC10-12) aliphatic	9.33E+03	BWB_GSAC
TPH (>EC12-16) aliphatic	4.51E+04	BWB_GSAC
TPH (>EC16-21) aliphatic	1.59E+06	BWB_GSAC
TPH (>EC21-35) aliphatic	1.59E+06	BWB_GSAC
TPH (>EC35-44) aliphatic	1.59E+06	BWB_GSAC
TPH (>EC6-7) aromatic (benzene)	4.36E+01	BWB_GSAC
TPH (>EC7-8) aromatic (toluene)	5.90E+04	BWB_GSAC
TPH (>EC8-10) aromatic	3.35E+03	BWB_GSAC
TPH (>EC10-12) aromatic	1.31E+04	BWB_GSAC
TPH (>EC12-16) aromatic	3.22E+04	BWB_GSAC
TPH (>EC16-21) aromatic	2.82E+04	BWB_GSAC
TPH (>EC21-35) aromatic	2.84E+04	BWB_GSAC
TPH (>EC35-44) aromatic	2.84E+04	BWB_GSAC
Total TPH	5.00E+02	BWB_GSAC
Naphthalene	2.04E+02	BWB_GSAC
Acenaphthylene	8.45E+04	BWB_GSAC
Acenaphthene	8.50E+04	BWB_GSAC
Fluorene	6.35E+04	BWB_GSAC
Phenanthrene	2.19E+04	BWB_GSAC
Anthracene	5.25E+05	BWB_GSAC
Fluoranthene	2.26E+04	BWB_GSAC
Pyrene	5.43E+04	BWB_GSAC
Benzo(a)anthracene	1.71E+02	BWB_GSAC
Chrysene	3.54E+02	BWB_GSAC
Benzo(b)fluoranthene	4.52E+01	BWB_GSAC
Benzo(k)fluoranthene	1.20E+03	BWB_GSAC
Benzo(a)pyrene	3.60E+01	BWB_GSAC
Indeno(1,2,3-c,d)pyrene	5.12E+02	BWB_GSAC
Generic Assessment Criteria		BWB
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lakeview Drive, Bicester	Commercial	
NTE2366	mg/kg	Source
Dibenzo(a,h)anthracene	3.60E+00	BWB_GSAC
Benzo(g,hi)perylene	4.02E+03	BWB_GSAC
Coal Tar (B(a)P as surrogate marker	1.54E+01	BWB_GSAC
Tetrachloroethene (PCE)	1.97E+01	BWB_GSAC
Trichloroethene (TCE)	1.30E+00	BWB_GSAC
<i>cis</i> -1,2-Dichloroethene	1.45E+01	BWB_GSAC
Vinyl Chloride (VC)	6.29E-02	BWB_GSAC
1,1,2,2-Tetrachloroethane (PCA)	2.90E+02	BWB_GSAC
1,1,1-Trichloroethane (TCA)	7.00E+02	BWB_GSAC
1,2-Dichloroethane	7.11E-01	BWB_GSAC
Carbon Tetrachloride	3.04E+00	BWB_GSAC
Carbon disulphide	1.16E+01	BWB_GSAC

. Location	Sample depth	Easting	Northing	Strata Type	Arsenic	Barium	Beryllium	Boron	Cadmium	, Chromium VI	Chromium 111	Copper	Lead	I norganic Mercury	Nickel	Selenium	Vanadium	Zinc	Cyanide (Free)	Cyanide (Complex)	Phenols (Total)
Detectio	n Limit				0.2	1.5	0.2	0.2	0.1	1	0.15	0.2	0.3	0.03	0.2	0.5	0.8	1	0.1	0.1	0.3
GSAC	0.00.0.00				6.40E+02	2.21E+04	1.24E+01	2.36E+05	2.30E+02	3.41E+01	9.09E+03	6.33E+04	2.33E+03	3.60E+03	1.04E+03	1.30E+04	6.63E+03	7.33E+05	4.30E+01	2.13E+02	2.65E+04
TP101	0.20-0.30	45/6/8.2	221686.4	66.3	28.0	/2	1.1	4.5	0.2	4	32	41	51	0.3	28	1	/1	95	1	1	1
TP101	0.40-0.50	45/6/8.2	221686.4	66.3	19.0	49	0.7	3	0.2	4	19	31	23	0.3	19	1	49	48	1		1
TP102	0.10-0.20	457715.5	221/05.1	66.3	12.0	130	0.43	3.3	0.7	4	21	/2	67	0.3	14	1	31	170	1		1
TP102	0.40-0.50	457715.5	221705.1	66.3	20.0	81	0.61	2.3	0.2	4	21	35	40	0.3	18	1	43	/8	1	1	1
TP103	0.20-0.30	457765.9	221691.1	66.2	22.0	68	0.72	1.7	0.2	4	22	36	30	0.3	23	1	40	/9	1	1	1
TP103	0.90-1.00	457765.9	221691.1	66.2	19.0	41	0.85	2.9	0.2	4	23	25	16	0.3	16	1	46	36	1	1	1
TP105	0.50-0.60	457642.4	221475.7	65.0	9.1	68	1.3	8.1	0.4	4	26	59	15	0.3	20	4.8	61	21	1	1	1
TP106	0.10-0.20	457666.5	221424.0	64.7	16.0	68	0.8	1.1	0.2	4	21	32	41	0.3	15	1	43	52	1	1	1
TP107	0.50-0.60	457736.7	221431.4	64.7	10.0	28	0.42	0.6	0.2	4	11	14	5.6	0.3	13	1	23	25	1	1	1
TP114	0.10-0.20	458106.4	221405.5	64.6	18.0	61	0.86	4.3	0.2	4	29	41	29	0.3	20	1	36	100	1	1	1
TP114	1.00-1.20	458106.4	221405.5	64.6	9.2	11	0.2	0.2	0.2	4	8.2	19	4.7	0.3	12	1	20	23	1	1	1
TP118	0.70-0.80	458104.9	221556.3	65.4	8.0	39	0.71	2.1	0.2	4	22	27	12	0.3	9.3	1	32	32	1	1	1
1P119	0.80-0.90	458141.0	221617.7	66.1	3.7	35	0.68	1.8	0.2	4	23	28	11	0.3	12	1	33	26	1	1	1
10120	0.60-0.70	458069.5	221668.2	66.4	14.0	50	0.46	0.9	0.2	4	14	25	/.1	0.3	18	1	24	29	1	1	1
1P121	0.10-0.20	458039.0	221518.2	65.2	9.4	61	0.84	5.6	0.2	4	28	42	39	0.3	19	1	40	78	1	1	1
TP125	0.40-0.50	457816.5	221604.2	66.8	16.0	85	1.3	2.2	0.2	4	26	26	14	0.3	50	1	50	86	1	1	1



Location	Sample depth	Benzene	Toluene	Ethyl benzene	Total Xylene	TPH (EC5-6) aliphatic	TPH (>EC6-8) aliphatic	TPH (≻EC8-10) aliphatic	TPH (>EC10-12) aliphatic	TPH (>EC12-16) aliphatic	TPH (>EC16-21) aliphatic	TPH (>EC21-35) aliphatic	TPH (≻EC35-44) aliphatic	TPH (>EC6-7) aromatic (benzene)	TPH (>EC7-8) aromatic (toluene)	TPH (≻EC8-10) aromatic	TPH (≻EC10-12) aromatic	TPH (≻EC12-16) aromatic	TPH(>EC16-21) aromatic	TPH (>EC21-35) aromatic	TPH(>EC35-44) aromatic
Detectio	n Limit	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.5	1.2	1.5	3.4	3.4	0.01	0.01	0.9	0.5	0.6	1.4	1.4	0.1
GSAC		2.81E+01	5.92E+04	6.05E+03	6.28E+03	3.31E+03	8.04E+03	2.04E+03	9.33E+03	4.51E+04	1.59E+06	1.59E+06	1.59E+06	4.36E+01	5.90E+04	3.35E+03	1.31E+04	3.22E+04	2.82E+04	2.84E+04	2.84E+04
TP101	0.20-0.30	0.001	0.001	0.001	0.002	0.001	0.001	0.001	1	2	8	15		0.001	0.001	0.001	1	4.2	10	18	
TP101	0.40-0.50																			ļ'	
TP102	0.10-0.20	0.001	0.001	0.001	0.002	0.001	0.001	0.001	1	7	15	200		0.001	0.001	0.001	4.3	14	33	410	
TP102	0.40-0.50																			ļ!	
TP103	0.20-0.30																			ļ'	
TP103	0.90-1.00																			ļ'	
TP105	0.50-0.60																			ļ'	
TP106	0.10-0.20																			ļ'	
TP107	0.50-0.60																			<u>ا</u>	
TP114	0.10-0.20																			<u>ا</u>	
TP114	1.00-1.20																			<u>ا</u>	
TP118	0.70-0.80																			<u>ا</u> ــــــــــــــــــــــــــــــــــــ	
TP119	0.80-0.90																			<u>ا</u>	
1P120	0.60-0.70																			<b>ب</b>	
1P121	0.10-0.20						l													<u>ا</u>	
11P125	0.40-0.50						1	1					1	1	1	1				, , , , , , , , , , , , , , , , , , , ,	



Location	Sample depth	Total TPH	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3- c,d)pyrene	Dibenzo(a,h) anthracen e	Benzo(g,hi)perylene	Benzo(a)pyrene (as surrogate marker)
Detectio	n Limit	10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
GSAC		5.00E+02	2.04E+02	8.45E+04	8.50E+04	6.35E+04	2.19E+04	5.25E+05	2.26E+04	5.43E+04	1./1E+02	3.54E+02	4.52E+01	1.20E+03	3.60E+01	5.12E+02	3.60E+00	4.02E+03	1.54E+01
TP101	0.20-0.30	48	0.05	0.05	0.05	0.05	0.05	0.05	0.24	0.22	0.12	0.15	0.13	0.13	0.17	0.05	0.05	0.05	0.17
TP101	0.40-0.50	27	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP102	0.10-0.20	1000	0.05	0.05	0.05	0.05	0.73	0.21	2.2	2.1	1.4	1.6	2	1.4	2.4	1.5	0.23	1.9	2.4
TP102	0.40-0.50	61	0.05	0.05	0.05	0.05	0.39	0.19	1.2	1.1	0.82	0.96	1.2	0.59	1.2	0.63	0.14	0.86	1.2
TP103	0.20-0.30	40	0.05	0.05	0.05	0.05	0.19	0.05	0.67	0.6	0.42	0.45	0.43	0.41	0.55	0.3	0.09	0.39	0.55
TP105	0.90-1.00	19	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP105	0.30-0.30	10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP107	0.50-0.60	10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP114	0 10-0 20	47	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP114	1.00-1.20	10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP118	0.70-0.80	10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP119	0.80-0.90	10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP120	0.60-0.70	19	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP121	0.10-0.20	10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP125	0.40-0.50	10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05



Commercial/Industrial Pathway	Vapour	Vapour	Soil	Particulate	SGV	Commercial	Soil
Specific Assessment Sub Criteria	Inhalation	Inhalation	Ingestion	Dust		GSAC	Saturation
derived May 2015	(Indoors)	(Outdoors)	& Dermal	Inhalation			Limit
			Contact				
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	mg/kg
Arsenic	NR	NR	6.35E+02	6.95E+02		6.40E+02	N/A
Barium	NR	NR	2.22E+04	3.48E+06		2.21E+04	N/A
Beryllium	NR	NR	3.97E+03	1.24E+01		1.24E+01	N/A
Codmium	NR		2.38E+05	2.99E+07		2.30E+05	N/A
Chromium VI	NR	NR	1.79E±02	2.43E+02 3.48E±01		2.30E+02 3.41E±01	N/A
Chromium III	NR	NR	3.31E+05	9.09E+03		9.09E+03	N/A
Copper	NR	NR	1.89E+05	9.50E+04		6.33E+04	N/A
Lead						2.33E+03	N/A
Inorganic Mercury	NR	NR	1.18E+03	2.09E+04		3.60E+03	N/A
Nickel	NR	NR	2.22E+04	1.04E+03		1.04E+03	N/A
Selenium	NR	NR	1.23E+04	1.93E+06		1.30E+04	N/A
Vanadium	NR	NR	2.15E+04	9.58E+03		6.63E+03	N/A
Zinc	NR	NR	7.35E+05	2.09E+08		7.33E+05	N/A
Cyanide (free)					4.30E+01	4.30E+01	N/A
Cyanide (Complex)		1.005.01		0.005.0/	2.13E+02	2.13E+02	N/A
Phenol	8.34E+04	1.09E+06	4.07E+04	3.28E+06		2.65E+04	4.16E+04
Benzene	2.97E+01	1.17E+04	5.53E+U2	4.8/E+05		2.81E+01	1.22E+03
Ethylbonzono	6.91E+04	1.83E+07	4.25E+05	4.80E+08		5.92E+04	5.09E+02
	6.43E+03	1.30E+06	3.43E±05	2.03E+07		6 28F+03	4 78E±02
TPH (EC5-6) aliphatic	3.31E+03	5.01E+06	4.77E+06	8.69E+08		3.31E+03	3.04E+02
TPH (>EC6-8) aliphatic	8.06E+03	7.82E+06	4.77E+06	8.69E+08		8.04E+03	1.44E+02
TPH (>EC8-10) aliphatic	2.09E+03	9.59E+05	9.53E+04	5.04E+07		2.04E+03	7.77E+01
TPH (>EC10-12) aliphatic	1.04E+04	2.13E+06	9.53E+04	5.04E+07		9.33E+03	4.75E+01
TPH (>EC12-16) aliphatic	8.68E+04	6.18E+06	9.53E+04	5.04E+07		4.51E+04	2.37E+01
TPH (>EC16-21) aliphatic	1.02E+07	1.76E+08	1.91E+06	3.48E+08		1.59E+06	8.48E+00
TPH (>EC21-35) aliphatic	1.02E+07	1.76E+08	1.91E+06	3.48E+08		1.59E+06	8.48E+00
TPH (>EC35-44) aliphatic	1.02E+07	1.76E+08	1.91E+06	3.48E+08		1.59E+06	8.48E+00
TPH (>EC6-7) aromatic (benzene)	4.75E+01	1.17E+04	5.53E+02	4.87E+05		4.36E+01	1.22E+03
TPH (>EC7-8) aromatic (toluene)	6.88E+04	1.83E+07	4.25E+05	4.84E+08		5.90E+04	8.69E+02
TPH (>EC8-10) aromatic	3.70E+03	5.80E+05	3.81E+04	1.04E+07		3.35E+03	6.13E+02
TPH (>EC10-12) aromatic	2.02E+04	1.35E+06	3.81E+04	1.04E+07		1.31E+04	3.64E+02
TPH (>EC12-16) aromatic	2.23E+03	4.48E+00	3.81E+04	1.04E+07		3.22E+04	2.37E+01
TPH (>EC21-35) aromatic	7 57E+08	5 56E+07	2.86E+04	5.22E+00		2.82E+04	4.83E+00
TPH (>EC35-44) aromatic	7 57E+08	5 56E+07	2.86E+04	5.22E+06		2 84F+04	4.83E+00
Total TPH	1072100	0.002707	2.002.101	0.222.100		5.00E+02	N/A
Naphthalene	2.06E+02	7.85E+04	3.64E+04	2.85E+05		2.04E+02	7.64E+01
Acenaphthylene	3.76E+05	2.62E+07	1.10E+05	2.09E+07		8.45E+04	8.61E+01
Acenaphthene	3.87E+05	2.74E+07	1.10E+05	2.09E+07		8.50E+04	5.70E+01
Fluorene	5.10E+05	2.44E+07	7.31E+04	1.39E+07		6.35E+04	3.09E+01
Phenanthrene	6.87E+05	1.31E+07	2.28E+04	4.34E+06		2.19E+04	3.60E+01
Anthracene	1.41E+07	3.07E+08	5.49E+05	1.04E+08		5.25E+05	1.17E+00
Fluoranthene	4.36E+06	2.63E+07	2.29E+04	4.34E+06		2.26E+04	1.89E+01
Pyrene	1.02E+07	5.98E+07	5.49E+04	1.04E+07		5.43E+04	2.20E+00
Benzo(a)anthracene	4.04E+03	7.01E+03	2.84E+02	5.21E+02		1.71E+02	1.71E+00
Benzo(b)fluoranthene	1.96E+04	2 195+02	7.12E+01	1.04E+03		3.54E+02	4.40E-01
Benzo(k)fluoranthene	8 14F+05	6.83E+04	1.88E+03	3 48F+03		1 20E+03	6.87F-01
Benzo(a)pyrene	2.10E+04	1.90E+03	5.67E+01	1.04E+02		3.60E+01	9.11E-01
Indeno(123-cd)pyrene	1.75E+05	2.29E+04	8.10E+02	1.49E+03		5.12E+02	6.14E-02
Dibenzo(ah)anthracene	1.01E+03	2.36E+02	5.67E+00	1.04E+01		3.60E+00	3.93E-03
Benzo(g,h,i)perylene	4.64E+06	3.81E+05	6.29E+03	1.15E+04		4.02E+03	1.54E-02
Coal Tar (B(a)P as surrogate marker	2.10E+04	1.90E+03	1.83E+01	1.04E+02		1.54E+01	4.24E+02
Tetrachloroethene (PCE)	1.98E+01	7.63E+04	1.12E+04	2.83E+06		1.97E+01	4.24E+02
Trichloroethene (TCE)	1.31E+00	5.07E+03	9.53E+02	1.98E+05		1.30E+00	1.54E+03
cis-1,2-Dichloroethene	1.45E+01	5.26E+04	1.12E+04	2.04E+06		1.45E+01	3.94E+03
Vinyl Chloride (VC)	6.31E-02	7.47E+02	2.67E+01	1.04E+05		6.29E-02	1.36E+03
1,1,2,2-Tetrachloroethane (PCA)	2.98E+02	2.49E+05	1.10E+04	2.01E+06		2.90E+02	2.6/E+03
1,1,1-1richioroethane (TCA)	7.01E+02	3.81E+06	1.14E+06	2.07E+08		7.00E+02	1.43E+03
Carbon Tetrachloride	7.14E-01 3.04E±00	1.08E+03	2.29E+02 7.62E±02	4.1/E+04 8.85E±0F		7.11E-01 3.04E±00	3.41E+U3 1.52E±02
Carbon disulphide	1.16F+01	7.12E+04	9.53F+04	4.97F+06	-	1.16F+01	2.11F+03
		ASC exceeds s	oil saturation	limit			





# **APPENDIX 12**

SOIL LEACHATE ASSESSMENT SHEETS

\*EQS Standard: Phenol and Benzene annual average of 300µg/l; Toluene 500µg/l for Freshwater, 400µg/l for Saltwater; 1,1,1-TCA 1,000µg/l.

Project Name:	Lakevie Drive, Bicester
Project Number:	NTE2366
Assessment for:	Soil Leachate Assessment
Laboratory:	i2
Receptor:	Freshwater
Receptor Water Hardness:	50 to <100

	Contaminant	Units	Detection	Guideline	Source	Number of	Min	Max	TP101	TP101	TP102
			Limit	Concentration		samples			0.200.30	0.400.50	0.100.20
	Arsenic	µg/l	1.1	50	EQS Freshwater	3	1.10	5.90	1.70	1.10	5.90
	Barium	mg/l	0.05	700	UK DWS	3	0.01	0.02	0.01	0.01	0.02
	Beryllium	µg/l	0.2	None Available		3	0.20	0.40	0.20	0.20	0.40
	Cadmium	µg/l	0.08	0.08	EQS Freshwater	3	0.08	0.08	0.08	0.08	0.08
	Chromium III	µg/l	0.4	4.7	EQS Freshwater	3	0.60	4.70	1.80	0.60	4.70
	Chromium VI	µg/l		3.4	EQS Freshwater	0	0.00	0.00			
tals	Copper	µg/l	0.7	1	EQS Freshwater	3	22.00	42.00	23.00	22.00	42.00
Me	Lead	µg/l	1	1.2	EQS Freshwater	3	1.80	6.80	2.10	1.80	6.80
₹	Mercury	µg/l	0.5	0.07	EQS Freshwater	3	0.50	0.50	0.50	0.50	0.50
lea	Nickel	µg/l	0.3	4	EQS Freshwater	3	1.50	4.20	4.20	1.50	4.20
-	Selenium	µg/l	4	10	UK DWS	3	4.00	4.00	4.00	4.00	4.00
	Vanadium	µg/l	1.7	None Available		3	1.70	7.70	1.70	1.70	7.70
	Zinc	µg/l	0.4	10.9	EQS Freshwater	3	9.90	12.00	10.00	9.90	12.00
	Sulphate	mg/l	0.1	400	EQS Freshwater	3	11.00	210.00	11.00	13.00	210.00
	Boron	mg/l	10	2000	EQS Freshwater	3	0.07	0.30	0.09	0.07	0.30
	рН					3	7.90	8.20	7.90	8.00	8.20
Janics	Cyanide (total)	µg∕l	10	1	EQS Freshwater	3	10.00	10.00	10.00	10.00	10.00
Inorg	Phenol*	µg/l		7.7	EQS Freshwater	0	0.00	0.00			



# **APPENDIX 13**

# **GROUNDWATER ASSESSMENT SHEETS**

\*EQS Standard: Phenol and Benzene annual average of 300μg/l; Toluene 500μg/l for Freshwater, 400μg/l for Saltwater; 1,1,1-TCA 1,000μg/l.

Project Name:	Lakevie Drive, Bicester
Project Number:	NTE2366
Assessment for:	Water Assessment
Laboratory:	i2
Receptor:	Freshwater
Receptor Water Hardness:	50 to <100

	Contaminant	Units	Detection Limit	Guideline Concentration	Source	Number of Samples	Min	Max	BH101	BH102	BH103	BH104	BH105	BH106	BH107	BH108	BH110	BH113
	Arsenic	µg/l	0.15	50	EQS Freshwater	10	0.35	3.94	0.35	0.41	3.06	1.66	1.43	0.92	1.28	0.37	3.94	1.28
	Barium	mg/l	0.06	700	UK DWS	10	30.00	160.00	34	47	43	86	67	30	160	62	97	49
	Beryllium	µg/l	0.10	None Available		0	0.00	0.00	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Cadmium	µg/l	0.02	0.08	EQS Freshwater	10	0.02	0.04	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.03	0.02	0.03	< 0.02	0.04
	Chromium III	µg/l	0.20	4.7	EQS Freshwater	10	0.20	0.70	< 0.2	< 0.2	< 0.2	0.5	0.7	< 0.2	0.7	0.3	0.2	< 0.2
	Chromium VI	µg/l	5.00	3.4	EQS Freshwater	10	0.00	0.00	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
tale	Copper	µg/l	0.50	1	EQS Freshwater	10	1.10	8.20	< 0.5	8.2	< 0.5	1.2	1.7	1.1	2.4	1.8	5.5	1.5
Ae	Lead	µg/l	0.20	1.2	EQS Freshwater	10	0.60	5.60	< 0.2	< 0.2	< 0.2	0.6	5.6	< 0.2	2.2	< 0.2	1	< 0.2
ŝ	Mercury	µg/l	0.05	0.07	EQS Freshwater	10	0.05	0.16	< 0.05	0.11	< 0.05	0.05	< 0.05	< 0.05	< 0.05	0.16	< 0.05	< 0.05
Ę	Nickel	µg/l	0.50	4	EQS Freshwater	10	0.90	31.00	0.9	2.6	1.2	31	5	15	7.4	3.4	11	4.4
	Selenium	µg/l	0.60	10	UK DWS	10	0.80	5.50	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	0.8	1.4	5.5	1.2	1.9
	Vanadium	µg/l	0.20	None Available		10	0.20	1.90	1.6	0.2	< 0.2	1.1	0.5	< 0.2	1.9	0.2	0.4	0.6
	Zinc	µg/l	0.50	10.9	EQS Freshwater	10	1.70	11.00	< 0.5	2.5	< 0.5	7.8	1.7	4	7.6	11	2.6	2
	Sulphate	mg/l	45	400	EQS Freshwater	10	88.40	1090.00	88.40	168.00	106.00	310.00	301.00	779.00	949.00	633.00	1090.00	103.00
	Boron	mg/l	10.00	2000	EQS Freshwater	10	78.00	1200.00	1100	390	1200	78	81	240	540	170	400	150
	рН					10	7.00	7.50	7.50	7.20	7.30	7.20	7.30	7.10	7.10	7.20	7.00	7.20
ganics	Cyanide (total)	µg/l	10	1	EQS Freshwater	10	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
lnorg	Phenol*	µg/l	10	7.7	EQS Freshwater	10	0.00	0.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
	Aliphatic C5-C6	µg/l		10	UK DWS	0	0.00	0.00										
	Aliphatic C6-C8	µg/l		10	UK DWS	0	0.00	0.00										
10	Aliphatic C8-C10	µg/l		10	UK DWS	0	0.00	0.00										
20	Aliphatic C10-C12	µg/l		10	UK DWS	0	0.00	0.00										
arb d	Aliphatic C12-C16	µg/l		10	UK DWS	0	0.00	0.00										
20	Aliphatic C16-C21	µg/l		10	UK DWS	0	0.00	0.00										
₽	Aliphatic C21-C35	µg/l		10	UK DWS	0	0.00	0.00										
Ē	Aromatic EC5-EC7	µg/l		10	EQS Freshwater	0	0.00	0.00										
le	Aromatic EC7-EC8	µg/l		74	EQS Freshwater	0	0.00	0.00										
etro	Aromatic EC8-EC10	µg/l		10	UK DWS	0	0.00	0.00										
- F	Aromatic EC10-EC12	µg/l		10	UK DWS	0	0.00	0.00										
oto	Aromatic EC12-EC16	µg/l		10	UK DWS	0	0.00	0.00										
-	Aromatic EC16-EC21	µg/l		10	UK DWS	0	0.00	0.00										
	Aromatic EC21-EC35	µg/l		10	UK DWS	0	0.00	0.00										
	Total TPH (EC5-EC35)	µg/l	10.00	10	EQS Freshwater	10	0.00	0.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
	Acenaphthene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Acenaphthylene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SC	Anthracene	µg/l	0.01	0.1	EQS Freshwater	10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
ōđ	Benzo(a)anthracene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
ca	Benzo(a)pyrene	µg/l	0.01	0.00017	EQS Freshwater	10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
de P	Benzo(b)fluoranthene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
È	Benzo(k)fluoranthene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
atic C	Benzo(g,h,i)perylene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
L L L	Chrysene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Arc	Dibenzo(a,h)anthracene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
<u>9</u>	Fluoranthene	µg/l	0.01	0.0063	EQS Freshwater	10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
5 S	Fluorene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
_o ∧	Indeno(1,2,3-c,d)pyrene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1	Naphthalene	µg/l	0.01	2	EQS Freshwater	10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Phenanthrene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1	Pyrene	µg/l	0.01	None Available		10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01



# **APPENDIX 14**

# PRELIMINARY WASTE ASSESSMENT





# Waste Classification Report



lob name
ITE2366 Bicester
Description/Comments
Project
NTE2366
Site

**Bicester** 

# Waste Stream Template

BWB Contaminated Land Suite WM3

#### Classified by

Name: **Richard Robinson** Date: **21/09/2017 10:03:31 UTC** Telephone: **0115 924 1100**  Company: BWB Consulting Ltd 5th Floor Waterfront House, Station Street Nottingham NG2 3DQ

#### Report

Created by: Richard Robinson Created date: 21/09/2017 10:03 UTC

#### Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TP101	0.20-0.30	Non Hazardous		3
2	TP101[1]	0.40-0.50	Non Hazardous		6
3	TP102	0.10-0.20	Hazardous	HP 7, HP 11	8
4	TP102[1]	0.40-0.50	Non Hazardous		11
5	TP103	0.20-0.30	Non Hazardous		13
6	TP103[1]	0.90-1.00	Non Hazardous		15
7	TP105	0.50-0.60	Non Hazardous		17
8	TP106	0.10-0.20	Non Hazardous		19
9	TP107	0.50-0.60	Non Hazardous		21
10	TP114	0.10-0.20	Non Hazardous		23
11	TP114[1]	1.00-1.20	Non Hazardous		25
12	TP118	0.70-0.80	Non Hazardous		27
13	TP119	0.80-0.90	Non Hazardous		29
14	TP120	0.60-0.70	Non Hazardous		31
15	TP121	0.10-0.20	Non Hazardous		33
16	TP125	0.40-0.50	Non Hazardous		35



Appendices	Page
Appendix A: Classifier defined and non CLP determinands	37
Appendix B: Rationale for selection of metal species	39
Appendix C: Version	39



Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	

# Sample details

Sample Name: TP101	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil
0.20-0.30 m Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
16% (no correction)		

#### Hazard properties

None identified

#### **Determinands**

#### Moisture content: 16% No Moisture Correction applied (MC)

#		Determinand CLP index number EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	<b>MC Applied</b>	Conc. Not Used
1	8	confirm TPH has NOT arisen from die	sel or petrol		Ø					
2	<b>\$</b>	arsenic {	1327-53-3	-	28 mg/kg	1.32	36.969 mg/kg	0.0037 %		
3	4	beryllium { beryllium oxide } 004-003-00-8 215-133-1	1304-56-9		1.1 mg/kg	2.775	3.053 mg/kg	0.000305 %		
4	*	boron { • boron tribromide/trichloride (combined) }	/trifluoride 10294-33-4, 10294-34-5, 7637-07-2	_	4.5 mg/kg	13.43	60.435 mg/kg	0.00604 %		
5	4	cadmium {	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< td=""></lod<>
6	4	chromium { Chromium(III) oxide } 215-160-9	1308-38-9		32 mg/kg	1.462	46.77 mg/kg	0.00468 %		
7	4	copper { dicopper oxide; copper (I)	oxide }		41 mg/kg	1.126	46.161 mg/kg	0.00462 %		
8	<b>\$</b>	lead { lead chromate } 082-004-00-2 231-846-0	7758-97-6	1	51 mg/kg	1.56	79.551 mg/kg	0.0051 %		
9	4	mercury { mercury dichloride } 080-010-00-X 231-299-8	7487-94-7	_	<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
10	*	nickel { nickel dihydroxide } 028-008-00-X 235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]	_	28 mg/kg	1.579	44.226 mg/kg	0.00442 %		
11	\$	selenium { selenium compounds with cadmium sulphoselenide and those s in this Annex }	the exception of becified elsewhere		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
12	~	zinc { zinc chromate } 024-007-00-3			95 mg/kg	2.774	263.544 mg/kg	0.0264 %		
13	8	рН	PH		7.8 pH		7.8 pH	7.8 pH		



#		Determinand	CAS Number	P Note	User entere	d data	Conv. Factor	Compound c	onc.	Classification value	Applied	Conc. Not Used
		CLP Index number EC Number	CAS Number	С							Σ	
14	*	cyanides { salts of hydrogen cyanic exception of complex cyanides such a ferricyanides and mercuric oxycyanide specified elsewhere in this Annex } 006-007-00-5	de with the as ferrocyanides, e and those		<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<lod< th=""></lod<>
		TPH (C6 to C40) petroleum group							_			
15			ТРН	-	48	mg/kg		48	mg/kg	0.0048 %		
		benzene		+								
16		601-020-00-8 200-753-7	71-43-2	-	<1	mg/kg		<1	mg/kg	<0.0001 %		<lod< th=""></lod<>
<b>—</b>		ethylbenzene										
17	Ŭ	601-023-00-4 202-849-4	100-41-4		<1	mg/kg		<1	mg/kg	<0.0001 %		<lod< th=""></lod<>
1.0		toluene		1								
18		601-021-00-3 203-625-9	108-88-3	-	<1	mg/kg		<1	mg/kg	<0.0001 %		<lod< th=""></lod<>
		xylene										
19		601-022-00-9 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<1	mg/kg		<1	mg/kg	<0.0001 %		<lod< th=""></lod<>
20	0	acenaphthene			<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<lod< th=""></lod<>
		201-469-6	83-32-9									
21	۲	acenaphthylene			<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<lod< th=""></lod<>
		205-917-1	208-96-8	_								
22	۲	anthracene			<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<lod< th=""></lod<>
		204-371-1	120-12-7	_								
23		benzo[a]anthracene			0.12	mg/kg		0.12	mg/kg	0.000012 %		
		601-033-00-9 200-280-6	56-55-3	-								
24		benzo[a]pyrene; benzo[def]chrysene			0.17	mg/kg		0.17	mg/kg	0.000017 %		
		601-032-00-3 200-028-5	60-32-8	+								
25			205 00 2		0.13	mg/kg		0.13	mg/kg	0.000013 %		
		bonzo[gbi]ponylono	205-99-2	+								
26	۲	205-883-8	101-24-2	-	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<lod< th=""></lod<>
		henzo[k]fluoranthene	131-24-2	+								
27		601-036-00-5 205-916-6	207-08-9	-	0.13	mg/kg		0.13	mg/kg	0.000013 %		
		chrysene	F01 00 0									
28		601-048-00-0 205-923-4	218-01-9	-	0.15	mg/kg		0.15	mg/kg	0.000015 %		
		dibenz[a,h]anthracene	1		0.05			0.05		0.000005.0/		1.00
29		601-041-00-2 200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<lod< th=""></lod<>
20	8	fluoranthene		1	0.04	m ~//		0.24	malle	0.000024.0/		
30		205-912-4	206-44-0		0.24	mg/kg		0.24	mg/кg	0.000024 %		
21	8	fluorene			<0.0E	ma/ka		<0.0E	malka			
31		201-695-5	86-73-7	-	<0.05	тід/кд		<0.05	тід/кд	<0.000005 %		<lod< th=""></lod<>
32	8	indeno[123-cd]pyrene			<0.05	ma/ka		<0.05	ma/ka			
		205-893-2	193-39-5		C0.05	mg/kg		<0.05	ing/kg	<0.000003 %		
33		naphthalene			<0.05	ma/ka		<0.05	ma/ka	<0.000005 %		
		601-052-00-2 202-049-5	91-20-3									
34	0	phenanthrene			< 0.05	ma/ka		<0.05	ma/ka	<0.000005 %		<lod< th=""></lod<>
		201-581-5	85-01-8									-
35	۲	pyrene	- I		0.22	mg/ka		0.22	mg/kg	0.000022 %		
		204-927-3	129-00-0									
36		phenol           604-001-00-2         203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<lod< th=""></lod<>
									Total:	0.0612 %		



Report created by Richard Robinson on 21/09/20	)1
------------------------------------------------	----

Key	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
0	Determinand defined or amended by HazWasteOnline (see Appendix A)
4	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<lod< th=""><th>Below limit of detection</th></lod<>	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

# **Supplementary Hazardous Property Information**



# Classification of sample: TP101[1]

Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
i	

# Sample details

Sample Name:	LoW Code:	
TP101[1]	Chapter:	17: Construction and Demolition Wastes (including excavated soil
Sample Depth:		from contaminated sites)
0.40-0.50 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05
Moisture content:		03)
10%		
(no correction)		

# Hazard properties

None identified

#### **Determinands**

#### Moisture content: 10% No Moisture Correction applied (MC)

#		CLP index number	Determinand EC Number	CAS Number	CLP Note	User entere	d data	Conv. Factor	Compound c	conc.	Classification value	MC Applied	Conc. Not Used
1	•	confirm TPH has N	IOT arisen from die	sel or petrol									
2 1	4	arsenic { arsenic tri	ioxide }	1227 52 2		19	mg/kg	1.32	25.086	mg/kg	0.00251 %		
3 1	4	beryllium { berylliur	n oxide }	1327-33-3		0.7	ma/ka	2.775	1.943	ma/ka	0.000194 %		
		004-003-00-8	215-133-1	1304-56-9									
4	~	boron { <sup>●</sup> boron tri (combined) }	bromide/trichloride/	trifluoride 10294-33-4, 10294-34-5, 7637-07-2		3	mg/kg	13.43	40.29	mg/kg	0.00403 %		
5	4	cadmium { cadmiui	m sulfide }	4000.00.0	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<lod< th=""></lod<>
6	4	chromium {	prium(III) oxide }	1308-38-9		19	mg/kg	1.462	27.77	mg/kg	0.00278 %		
7	4	copper { <sup>a</sup> dicoppe	er oxide; copper (I)	oxide }		31	mg/kg	1.126	34.903	mg/kg	0.00349 %		
	æ	lead { lead chroma	te }	1017-00-1		00		4.50	25.070		0.0000.0/		
8		082-004-00-2	231-846-0	7758-97-6	11	23	тд/кд	1.50	35.876	тд/кд	0.0023 %		
9 *	~	mercury { mercury 080-010-00-X	dichloride } 231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<lod< th=""></lod<>
		nickel { nickel dihyc	droxide }										
10		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		19	mg/kg	1.579	30.01	mg/kg	0.003 %		
11	4	selenium { seleniur cadmium sulphose in this Annex }	n compounds with t lenide and those sp	the exception of becified elsewhere		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<lod< th=""></lod<>
12	4	zinc { zinc chromat	<mark>e</mark> }	I		48	mg/kg	2.774	133.159	mg/kg	0.0133 %		
13	0	pH		PH		8	pН		8	pН	8pH		



		Determinand	te		Conv		Classification	lied	Conc. Not
#			No	User entered data	Factor	Compound conc.	value	App	Used
		CLP index number EC Number CAS Number	CLF					MC	
14	4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<lod< td=""></lod<>
15	0	TPH (C6 to C40) petroleum group		27 mg/kg		27 mg/kg	0.0027 %		
	-	TPH	_						
16	۲	acenaphthene	_	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
	-	201-469-6 83-32-9	_						
17	۲	acenaphthylene	_	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
<u> </u>	-	205-917-1 208-96-8	_			 			
18	۲	anthracene	_	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
<u> </u>	-	204-371-1 120-12-7	_						
19		benzolajanthracene	_	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
	-	601-033-00-9 200-280-6 p6-55-3	_						
20			_	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
-	-	bonzo[b]fluoranthono							
21		601-034-00-4 205-011-0 205-00-2	_	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
		henzolahilnervlene							
22		205-883-8 191-24-2	-	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
		benzo[k]fluoranthene							
23		601-036-00-5 205-916-6 207-08-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
		chrysene		0.05 //	<u> </u>	0.05 //	0.000005.0/		1.00
24		601-048-00-0 205-923-4 218-01-9	-	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene		-0.0E malka		-0.05 mg//rg	-0.00000E 0/		
25		601-041-00-2 200-181-8 53-70-3	_	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26		fluoranthene		-0.05 mg/kg		-0.05 mg/kg	-0.0000E %		
20		205-912-4 206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000003 %		<lod< td=""></lod<>
27		fluorene		<0.05 mg/kg		<0.05 mg/kg	<0.00005.94		
21		201-695-5 86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000003 /8		LOD
28		indeno[123-cd]pyrene		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		
20		205-893-2 193-39-5		<0.00 mg/kg		<0.00 mg/kg	<0.000000 /0		LOD
29		naphthalene		<0.05 mg/kg		<0.05 ma/ka	<0.000005 %		
20		601-052-00-2 202-049-5 91-20-3		<0.00 mg/kg		<0.00 mg/kg	<0.000000 /0		LOD
30		phenanthrene		<0.05 ma/ka		<0.05 ma/ka	<0.000005 %		<1 OD
Ľ		201-581-5 85-01-8							
31	۲	pyrene		<0.05 ma/ka		<0.05 ma/ka	<0.000005 %		<lod< td=""></lod<>
Ľ		204-927-3 129-00-0	1						
32		phenol		<1 ma/ka		<1 ma/ka	<0.0001 %		<lod< td=""></lod<>
		604-001-00-2 203-632-7 108-95-2							
						Total:	0.035 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
Θ	Determinand defined or amended by HazWasteOnline (see Appendix A)
4	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<lod< th=""><th>Below limit of detection</th></lod<>	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

# Supplementary Hazardous Property Information



Report created by Richard Robinson on 21/09/2017

#### **Classification of sample: TP102**

;
🛆 Hazardous Waste
Classified as 17 05 03 *
in the List of Waste

#### Sample details

Sample Name: TP102 Sample Depth: 0.10-0.20 m Moisture content: 7.9%	LoW Code: Chapter: Entry:	<ul> <li>17: Construction and Demolition Wastes (including excavated soil from contaminated sites)</li> <li>17 05 03 * (Soil and stones containing hazardous substances)</li> </ul>
7.9% (no correction)		

#### **Hazard properties**

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

|--|

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.1%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.1%)

#### **Determinands**

Moisture content: 7.9% No Moisture Correction applied (MC)

#		CLP index number	Determinand EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	8	confirm TPH has N	OT arisen from die	sel or petrol							
2	4	arsenic { arsenic tri 033-003-00-0	<mark>oxide</mark> } 215-481-4	1327-53-3		12 mg/k	g 1.32	15.844 mg/kg	0.00158 %		
3	4	beryllium { berylliur 004-003-00-8	<mark>n oxide</mark> } 215-133-1	1304-56-9		0.43 mg/k	g 2.775	1.193 mg/kg	0.000119 %		
4	4	boron { <sup>®</sup> boron tri (combined) }	bromide/trichloride/	t <mark>rifluoride</mark> 10294-33-4, 10294-34-5, 7637-07-2		3.3 mg/k	g 13.43	44.319 mg/kg	0.00443 %		
5	4	cadmium {	<mark>n sulfide</mark> } 215-147-8	1306-23-6	1	0.7 mg/k	g 1.285	0.9 mg/kg	0.00007 %		
6	4	chromium { <sup>●</sup> chro	<mark>mium(III) oxide</mark> } 215-160-9	1308-38-9		21 mg/k	g 1.462	30.693 mg/kg	0.00307 %		



#		Determinand	CAS Number	P Note	User entere	d data	Conv. Factor	Compound co	inc.	Classification value	C Applied	Conc. Not Used
7	4	copper { Chicopper oxide; copper (I) o	<pre>&gt;xide } 1317-39-1</pre>	<u>ਹ</u>	72	mg/kg	1.126	81.064	mg/kg	0.00811 %	W	
8	*	lead { lead chromate }	7758-97-6	1	67	mg/kg	1.56	104.508	mg/kg	0.0067 %		
9	\$	mercury { mercury dichloride }	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<lod< td=""></lod<>
10	4	nickel { nickel dihydroxide } 028-008-00-X 235-008-5 [1] 024-348-1 [2]	12054-48-7 [1]	-	14	mg/kg	1.579	22.113	mg/kg	0.00221 %		
11	4	selenium { selenium compounds with t cadmium sulphoselenide and those sp in this Annex }	he exception of ecified elsewhere	_	<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<lod< td=""></lod<>
12	\$	zinc { zinc chromate }	[		170	mg/kg	2.774	471.605	mg/kg	0.0472 %		
13	0	pH	PH	_	9.7	pН		9.7	pН	9.7 pH		
14	<b>\$</b>	cyanides { salts of hydrogen cyanide exception of complex cyanides such as ferricyanides and mercuric oxycyanide specified elsewhere in this Annex } 006-007-00-5	e with the s ferrocyanides, and those		<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<lod< td=""></lod<>
15	0	TPH (C6 to C40) petroleum group	ТРН		1000	mg/kg		1000	mg/kg	0.1 %		
16		benzene 601-020-00-8 200-753-7	71-43-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<lod< td=""></lod<>
17	0	ethylbenzene	100.41.4		<1	mg/kg		<1	mg/kg	<0.0001 %		<lod< td=""></lod<>
18		toluene	400.00.0		<1	mg/kg		<1 1	mg/kg	<0.0001 %		<lod< td=""></lod<>
		601-021-00-3 203-625-9 xylene	108-88-3									
19		601-022-00-9 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	_	<1	mg/kg		<1 1	mg/kg	<0.0001 %		<lod< td=""></lod<>
20	8	acenaphthene 201-469-6	83-32-9	_	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<lod< td=""></lod<>
21	0	acenaphthylene	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<lod< td=""></lod<>
22	0	anthracene 204-371-1	120-12-7	_	0.21	mg/kg		0.21	mg/kg	0.000021 %		
23		benzo[a]anthracene 601-033-00-9 200-280-6	56-55-3		1.4	mg/kg		1.4	mg/kg	0.00014 %		
24		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 200-028-5	50-32-8		2.4	mg/kg		2.4	mg/kg	0.00024 %		
25		benzo[b]fluoranthene 601-034-00-4 205-911-9	205-99-2		2	mg/kg		2	mg/kg	0.0002 %		
26	8	benzo[ghi]perylene	191-24-2		1.9	mg/kg		1.9	mg/kg	0.00019 %		
27		benzo[k]fluoranthene	207-08-9	-	1.4	mg/kg		1.4	mg/kg	0.00014 %		
28		chrysene 601-048-00-0 205-023-4	218-01-9	-	1.6	mg/kg		1.6	mg/kg	0.00016 %		
29		dibenz[a,h]anthracene	53-70-3		0.23	mg/kg		0.23	mg/kg	0.000023 %		
30	8	fluoranthene	boe 44.0	_	2.2	mg/kg		2.2	mg/kg	0.00022 %		
31	0	fluorene	L00-77-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<lod< td=""></lod<>
32	8	indeno[123-cd]pyrene	102 20 5		1.5	mg/kg		1.5	mg/kg	0.00015 %		
		205-893-2	193-38-5									



#		CLP index number	Determinand EC Number	CAS Number	CLP Note	User entere	ed data	Conv. Factor	Compound	l conc.	Classification value	MC Applied	Conc. Not Used
33		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<lod< th=""></lod<>
34	8	phenanthrene	201-581-5	85-01-8		0.73	mg/kg		0.73	mg/kg	0.000073 %		
35	۵	pyrene	204-927-3	129-00-0		2.1	mg/kg		2.1	mg/kg	0.00021 %		
36		phenol 604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<lod< th=""></lod<>
		4			•					Total:	0.176 %	Γ	

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кеу	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
4	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<lod< th=""><th>Below limit of detection</th></lod<>	Below limit of detection

CLP: Note 1 Only the metal concentration has been used for classification

#### **Supplementary Hazardous Property Information**



Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
•••••••••••••••••••••••••••••••••••••••	

# Sample details

Sample Name:	LoW Code:	
TP102[1]	Chapter:	17: Construction and Demolition Wastes (including excavated soil
Sample Depth:		from contaminated sites)
0.40-0.50 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05
Moisture content:		03)
12%		
(no correction)		

#### Hazard properties

None identified

#### **Determinands**

#### Moisture content: 12% No Moisture Correction applied (MC)

#		Determinand		o Note	User entered data	Conv. Factor	Compound conc.	Classification value	Applied	Conc. Not Used
		CLP index number EC Number	CAS Number	U.L.					MC	
1		confirm TPH has NOT arisen from diesel	or petrol							
2	4	arsenic { arsenic trioxide }			20 mg/kg	1.32	26.407 mg/kg	0.00264 %		
		033-003-00-0 215-481-4 13	27-53-3							
3	4	beryllium { beryllium oxide }			0.61 mg/kg	2.775	1.693 mg/kg	0.000169 %		
		004-003-00-8 215-133-1 13	04-56-9							
	4	boron { • boron tribromide/trichloride/trifl	luoride							
4		(combined) }			2.2 ma/ka	12 12	20.990 ma/ka	0.00200.9/		
4		10	294-33-4,		2.5 Hig/kg	13.43	30.009 Hig/kg	0.00309 %		
		10	294-34-5,							
		cadmium { cadmium sulfide }	01 01 2							
5	**	048-010-00-4 215-147-8 13	06-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< td=""></lod<>
6	4	chromium { <sup>•</sup> chromium(III) oxide }			21 ma/ka	1.462	30.693 ma/ka	0.00307 %		
-		215-160-9 13	08-38-9					,-		
7	4	copper { • dicopper oxide; copper (I) oxid	de }		35 mg/kg	1.126	39.406 mg/kg	0.00394 %		
		029-002-00-X 215-270-7 13	17-39-1							
8	4	lead { <mark>lead chromate</mark> }		1	40 mg/kg	1.56	62.393 mg/kg	0.004 %		
		082-004-00-2 231-846-0 77	758-97-6							
9	4	mercury { mercury dichloride }			<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
		080-010-00-X 231-299-8 74	87-94-7							
10	4	nickel { nickel dihydroxide }			40	4 5 70	00.404	0.00004.0/		
10		028-008-00-X 235-008-5 [1] 12 234-348-1 [2] 11	2054-48-7 [1] 113-74-9 [2]		18 mg/kg	1.579	28.431 mg/kg	0.00284 %		
11	4	selenium { selenium compounds with the cadmium sulphoselenide and those speci	exception of ified elsewhere		<1 ma/ka	2 554	<2.554 ma/ka	<0 000255 %		
' '		in this Annex }			<1 IIIg/kg	2.004	~2.004 ing/kg	0.000200 /0		
		034-002-00-8								
12	4	zinc { zinc chromate }			78 mg/kg	2.774	216.383 mg/kg	0.0216 %		
		024-007-00-3								
13	۲	pH	4		8.1 pH		8.1 pH	8.1 pH		
L		FI FI	1				l			



#		Determinand           CLP index number         EC Number         CAS Number	CLP Note	User entered d	lata	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	~	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<1 m	ng/kg	1.884	<1.884 mg/kg	<0.000188 %		<lod< td=""></lod<>
15	۵	TPH (C6 to C40) petroleum group		61 m	ng/kg		61 mg/kg	0.0061 %		
16	۵	acenaphthene 201-469-6 83-32-9		<0.05 m	ng/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17		acenaphthylene 205-917-1 208-96-8		<0.05 m	ng/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	0	anthracene 204-371-1 120-12-7		0.19 m	ng/kg		0.19 mg/kg	0.000019 %		
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3		0.82 m	ng/kg		0.82 mg/kg	0.000082 %		
20		benzo[a]pyrene; benzo[def]chrysene           601-032-00-3         200-028-5         50-32-8		1.2 m	ng/kg		1.2 mg/kg	0.00012 %		
21		benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2		1.2 m	ng/kg		1.2 mg/kg	0.00012 %		
22	۲	benzo[ghi]perylene 205-883-8  191-24-2		0.86 m	ng/kg		0.86 mg/kg	0.000086 %		
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		0.59 m	ng/kg		0.59 mg/kg	0.000059 %		
24		chrysene 601-048-00-0 205-923-4 218-01-9		0.96 m	ng/kg		0.96 mg/kg	0.000096 %		
25		dibenz[a,h]anthracene 601-041-00-2 200-181-8 53-70-3		0.14 m	ng/kg		0.14 mg/kg	0.000014 %		
26	0	fluoranthene 205-912-4 206-44-0		1.2 m	ng/kg		1.2 mg/kg	0.00012 %		
27	0	fluorene 201-695-5 86-73-7		<0.05 m	ng/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	۲	indeno[123-cd]pyrene 205-893-2  193-39-5		0.63 m	ng/kg		0.63 mg/kg	0.000063 %		
29		naphthalene 601-052-00-2 202-049-5 91-20-3		<0.05 m	ng/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30		phenanthrene 201-581-5 85-01-8		0.39 m	ng/kg		0.39 mg/kg	0.000039 %		
31	۵	pyrene 204-927-3 129-00-0		1.1 m	ng/kg		1.1 mg/kg	0.00011 %		
32		phenol 604-001-00-2 203-632-7 108-95-2		<1 m	ng/kg		<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
							Total	0.049 %		

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	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
0	Determinand defined or amended by HazWasteOnline (see Appendix A)
4	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<lod< th=""><th>Below limit of detection</th></lod<>	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

# **Supplementary Hazardous Property Information**



Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
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# Sample details

Sample Name:	LoW Code:	17: Construction and Demolition Wastes (including excavated soil
Sample Depth: 0 20-0 30 m	Entry:	from contaminated sites) 17 05 04 (Soil and stopes other than those mentioned in 17 05
Moisture content:	Lifti y.	03)
11% (no correction)		

#### Hazard properties

None identified

#### **Determinands**

#### Moisture content: 11% No Moisture Correction applied (MC)

#		Determinand CLP index number EC Number CAS Numb	er	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	<b>AC Applied</b>	Conc. Not Used
1	8	confirm TPH has NOT arisen from diesel or petrol		0					2	
2	<b>\$</b>	arsenic { arsenic trioxide } 033-003-00-0 215-481-4 1327-53-3			22 mg/kg	1.32	29.047 mg/kg	0.0029 %		
3	<b>\$</b>	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9			0.72 mg/kg	2.775	1.998 mg/kg	0.0002 %		
4	*	boron {      boron tribromide/trichloride/trifluoride     (combined) }     10294-33-4,     10294-34-5,     7637-07-2			1.7 mg/kg	13.43	22.831 mg/kg	0.00228 %		
5	<b>\$</b>	cadmium {		1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< td=""></lod<>
6	4	chromium { Chromium(III) oxide } 215-160-9 1308-38-9			22 mg/kg	1.462	32.154 mg/kg	0.00322 %		
7	<b>\$</b>	copper { dicopper oxide; copper (I) oxide }			36 mg/kg	1.126	40.532 mg/kg	0.00405 %		
8	*	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6		1	30 mg/kg	1.56	46.794 mg/kg	0.003 %		
9	4	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7			<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
10	*	nickel { nickel dihydroxide } 028-008-00-X 235-008-5 [1] 12054-48-7 [1 234-348-1 [2] 11113-74-9 [2	]		23 mg/kg	1.579	36.328 mg/kg	0.00363 %		
11	\$	selenium { selenium compounds with the exception c cadmium sulphoselenide and those specified elsewh in this Annex }	f ere		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
12	*	zinc { zinc chromate }			79 mg/kg	2.774	219.158 mg/kg	0.0219 %		
13	8	pH PH			8.1 pH		8.1 pH	8.1 pH		



#		Determinand CLP index number EC Number CAS Number	CLP Note	User entered da	ata	Conv. Factor	Compound conc.	Classification value	AC Applied	Conc. Not Used
14	~	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 m	g/kg	1.884	<1.884 mg/kg	<0.000188 %	2	<lod< td=""></lod<>
15	۲	TPH (C6 to C40) petroleum group		46 mg	g/kg		46 mg/kg	0.0046 %		
16	۵	acenaphthene 201-469-6 83-32-9		<0.05 m	g/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	0	acenaphthylene 205-917-1 208-96-8		<0.05 mį	g/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	0	anthracene 204-371-1 120-12-7		<0.05 m	g/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3		0.42 mį	g/kg		0.42 mg/kg	0.000042 %		
20		benzo[a]pyrene; benzo[def]chrysene           601-032-00-3         200-028-5         50-32-8		0.55 mę	g/kg		0.55 mg/kg	0.000055 %		
21		benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2		0.43 mg	g/kg		0.43 mg/kg	0.000043 %		
22	۵	benzo[ghi]perylene 205-883-8 191-24-2		0.39 mg	g/kg		0.39 mg/kg	0.000039 %		
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		0.41 mg	g/kg		0.41 mg/kg	0.000041 %		
24		chrysene 601-048-00-0 205-923-4 218-01-9		0.45 mg	g/kg		0.45 mg/kg	0.000045 %		
25		dibenz[a,h]anthracene 601-041-00-2 200-181-8 53-70-3		0.09 mg	g/kg		0.09 mg/kg	0.000009 %		
26	8	fluoranthene 205-912-4 206-44-0		0.67 m	g/kg		0.67 mg/kg	0.000067 %		
27	8	fluorene 201-695-5 86-73-7		<0.05 m	g/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	۲	indeno[123-cd]pyrene 205-893-2 193-39-5		0.3 m	g/kg		0.3 mg/kg	0.00003 %		
29		naphthalene 601-052-00-2 202-049-5 91-20-3		<0.05 mg	g/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	۵	phenanthrene 201-581-5 85-01-8		0.19 mg	g/kg		0.19 mg/kg	0.000019 %		
31	۲	pyrene 204-927-3 129-00-0		0.6 mg	g/kg		0.6 mg/kg	0.00006 %		
32		phenol 604-001-00-2 203-632-7 108-95-2	_	<1 m	g/kg		<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
		· · · · · · · · · · · · · · · · · · ·					Total	0.0469 %		

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	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
0	Determinand defined or amended by HazWasteOnline (see Appendix A)
4	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<lod< th=""><th>Below limit of detection</th></lod<>	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

# Supplementary Hazardous Property Information



Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
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# Sample details

Sample Name:	LoW Code:	
TP103[1]	Chapter:	17: Construction and Demolition Wastes (including excavated soil
Sample Depth:		from contaminated sites)
0.90-1.00 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05
Moisture content:		03)
18%		
(no correction)		

#### Hazard properties

None identified

#### **Determinands**

#### Moisture content: 18% No Moisture Correction applied (MC)

#		Determinand		' Note	User entered data	Conv. Factor	Compound conc.	Classification value	Applied	Conc. Not Used
		CLP index number EC Number C	CAS Number	Ľ.					ВC	
1	0	confirm TPH has NOT arisen from diesel or	r petrol		M					
2	4	arsenic { arsenic trioxide }			19 mg/kg	1.32	25.086 mg/kg	0.00251 %		
		033-003-00-0 215-481-4 1327	7-53-3							
3	4	beryllium { beryllium oxide }			0.85 mg/kg	2.775	2.359 mg/kg	0.000236 %		
		004-003-00-8 215-133-1 1304	4-56-9							
	4	boron { <pre> boron tribromide/trichloride/trifluc boron {</pre>	oride							
4		(combined) }			20 ma/ka	12 12	29.047 ma/ka	0 00280 %		
4		1029	94-33-4,		2.9 Hig/kg	13.43	36.947 Hig/kg	0.00369 %		
		1029	94-34-5, 7-07-2							
		cadmium { cadmium sulfide }	1012							
5	~	048-010-00-4 215-147-8 1306	5-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< td=""></lod<>
6	4	chromium { <sup>•</sup> chromium(III) oxide }	200		23 mg/kg	1 462	33 616 mg/kg	0 00336 %	H	
0		215-160-9 1308	8-38-9		20		soloro nignig	0100000 /0		
7	4	copper {	}		25 mg/kg	1.126	28.147 mg/kg	0.00281 %		
		029-002-00-X 215-270-7 1317	7-39-1							
8	4	lead { <mark>lead chromate</mark> }		1	16 mg/kg	1.56	24.957 mg/kg	0.0016 %		
		082-004-00-2 231-846-0 7758	8-97-6							
9	4	mercury { mercury dichloride }			<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
		080-010-00-X 231-299-8 7487	7-94-7							
	4	nickel { nickel dihydroxide }								
10		028-008-00-X 235-008-5 [1] 1205 234-348-1 [2] 1111	54-48-7 [1] 13-74-9 [2]		16 mg/kg	1.579	25.272 mg/kg	0.00253 %		
	4	selenium { selenium compounds with the ex cadmium sulphoselenide and those specifie	xception of							
11		in this Annex }			<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
		034-002-00-8								
12	4	zinc { zinc chromate }			36 ma/ka	2 774	99.869 ma/ka	0 00999 %		
<u> </u>		024-007-00-3				2.114		0.00000 /0		
13	0	pH			7.9 pH		7.9 pH	7.9 pH		
		PH								



#		Determinand CLP index number EC Number CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	AC Applied	Conc. Not Used
14	~	cyanides { <sup>•</sup> salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 mg/k	<b>1.884</b>	<1.884 mg/kg	<0.000188 %		<lod< td=""></lod<>
15	۵	TPH (C6 to C40) petroleum group		19 mg/k	9	19 mg/kg	0.0019 %		
16	0	acenaphthene 201-469-6 83-32-9		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	8	acenaphthylene 205-917-1 208-96-8		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	۵	anthracene 204-371-1 120-12-7		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
20		benzo[a]pyrene; benzo[def]chrysene           601-032-00-3         200-028-5         50-32-8		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
21		benzo[b]fluoranthene           601-034-00-4         205-911-9         205-99-2		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	0	benzo[ghi]perylene 205-883-8  191-24-2		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene           601-048-00-0         205-923-4         218-01-9		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene           601-041-00-2         200-181-8         53-70-3		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26	۵	fluoranthene 205-912-4 206-44-0		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
27	۵	fluorene 201-695-5 86-73-7		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	۵	indeno[123-cd]pyrene 205-893-2 193-39-5		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
29		naphthalene           601-052-00-2         202-049-5         91-20-3		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	۲	phenanthrene 201-581-5 85-01-8		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
31	9	pyrene 204-927-3 129-00-0		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
32		phenol 604-001-00-2 203-632-7 108-95-2		<1 mg/k	9	<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
1						Total:	0.0295 %		

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Ney	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
0	Determinand defined or amended by HazWasteOnline (see Appendix A)
4	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<lod< th=""><th>Below limit of detection</th></lod<>	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

# **Supplementary Hazardous Property Information**



Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
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# Sample details

Sample Name:     LoW Code:       TP105     Chapter:     17: Construction and Demolition Water       Sample Depth:     from contaminated sites)	astes (including excavated soil
U.SU-U.60 m     Entry:     17 05 04 (Soll and stones other that of the stones other the stones other the stones other the stones other that of the stones other the stones othe stones other the stones other the stones other the stones other	n those mentioned in 17 05
(no correction)	

#### Hazard properties

None identified

#### **Determinands**

#### Moisture content: 41% No Moisture Correction applied (MC)

#		CLP index number EC Number CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	AC Applied	Conc. Not Used
1		confirm TPH has NOT arisen from diesel or petrol	-					2	
2	<b>&amp;</b>	arsenic { arsenic trioxide } 033-003-00-0 215-481-4 1327-53-3	-	9.1 mg/kg	1.32	12.015 mg/kg	0.0012 %		
3	<b>\$</b>	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9	-	1.3 mg/kg	2.775	3.608 mg/kg	0.000361 %		
4	*	boron { • boron tribromide/trichloride/trifluoride (combined) } 10294-33-4, 10294-34-5, 7637-07-2		8.1 mg/kg	13.43	108.783 mg/kg	0.0109 %		
5	*	cadmium {	_ 1	0.4 mg/kg	1.285	0.514 mg/kg	0.00004 %		
6	4	chromium {         chromium(III) oxide }           215-160-9         1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
7	4	copper { <pre>     dicopper oxide; copper (I) oxide } 029-002-00-X</pre>		59 mg/kg	1.126	66.427 mg/kg	0.00664 %		
8	~	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6	_ 1	15 mg/kg	1.56	23.397 mg/kg	0.0015 %		
9	\$	mercury { mercury dichloride }           080-010-00-X         231-299-8         7487-94-7	_	<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< th=""></lod<>
10	4	nickel { nickel dihydroxide } 028-008-00-X 235-008-5 [1] 12054-48-7 [1] 234-348-1 [2] 11113-74-9 [2]	_	20 mg/kg	1.579	31.59 mg/kg	0.00316 %		
11	8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		4.8 mg/kg	2.554	12.257 mg/kg	0.00123 %		
12	*	zinc { zinc chromate }		21 mg/kg	2.774	58.257 mg/kg	0.00583 %		
13	8	pH		7.4 pH		7.4 pH	7.4 pH		



#		Determinand           CLP index number         EC Number         CAS Number	CLP Note	User entered da	ata	Conv. Factor	Compound conc.	Classification value	AC Applied	Conc. Not Used
14	4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 mį	ıg/kg	1.884	<1.884 mg/kg	<0.000188 %		<lod< td=""></lod<>
15	8	TPH (C6 to C40) petroleum group		<10 m(	ig/kg		<10 mg/kg	<0.001 %		<lod< td=""></lod<>
16	8	acenaphthene 201-469-6 83-32-9		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	8	acenaphthylene 205-917-1 208-96-8	_	<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	8	anthracene 204-371-1 120-12-7	_	<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3		<0.05 m	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
20		benzo[a]pyrene; benzo[def]chrysene		<0.05 m	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
21		benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	0	benzo[ghi]perylene 205-883-8 191-24-2		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene		<0.05 m	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene		<0.05 m	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26	8	fluoranthene		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
27	8	fluorene		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	0	indeno[123-cd]pyrene	+	<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
29		naphthalene		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	۲	phenanthrene		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
31	0	pyrene		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
32		phenol		<1 m	g/kg		<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
$\vdash$						(	Total:	0.036 %		

Key

User supplied data Determinand values ignored for classification, see column 'Conc. Not Used' for reason Determinand defined or amended by HazWasteOnline (see Appendix A) Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound 4 concentration <LOD Below limit of detection CLP: Note 1 Only the metal concentration has been used for classification



	:
Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
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# Sample details

Sample Name: TP106	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil
O.10-0.20 m Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
28% (no correction)		

#### Hazard properties

None identified

#### **Determinands**

#### Moisture content: 28% No Moisture Correction applied (MC)

#		Determinand CLP index number EC Number CAS Numb	er	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	<b>MC Applied</b>	Conc. Not Used
1	8	confirm TPH has NOT arisen from diesel or petrol								
2	4	arsenic { arsenic trioxide } 033-003-00-0 215-481-4 1327-53-3			16 mg/kg	1.32	21.125 mg/kg	0.00211 %		
3	<b>\$</b>	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9			0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	*	boron {  boron tribromide/trichloride/trifluoride (combined) }  10294-33-4, 10294-34-5, 7637-07-2			7.7 mg/kg	13.43	103.411 mg/kg	0.0103 %		
5	4	cadmium {		1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< td=""></lod<>
6	4	chromium { Chromium(III) oxide } 215-160-9  1308-38-9			21 mg/kg	1.462	30.693 mg/kg	0.00307 %		
7	4	copper { dicopper oxide; copper (I) oxide }			32 mg/kg	1.126	36.028 mg/kg	0.0036 %		
8	*	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6		1	41 mg/kg	1.56	63.952 mg/kg	0.0041 %		
9	<b>\$</b>	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7			<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
10	<b>Å</b>	nickel { nickel dihydroxide } 028-008-00-X			15 mg/kg	1.579	23.692 mg/kg	0.00237 %		
11	\$	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhe	ere		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
12	*	zinc { zinc chromate }			52 mg/kg	2.774	144.256 mg/kg	0.0144 %		
13	9	pH			7.6 pH		7.6 pH	7.6 pH		



#		Determinand           CLP index number         EC Number         CAS Number	CLP Note	User entered data	Conv Facto	Compound conc.	Classification value	AC Applied	Conc. Not Used
14	4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 mg/	<mark>(g</mark> 1.884	4 <1.884 mg/kg	<0.000188 %	2	<lod< th=""></lod<>
15	8	TPH (C6 to C40) petroleum group		<10 mg/	g	<10 mg/kg	<0.001 %		<lod< td=""></lod<>
16	8	acenaphthene 201-469-6 83-32-9		<0.05 mg/	(g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	8	acenaphthylene 205-917-1 208-96-8	_	<0.05 mg/	(g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	8	anthracene 204-371-1 120-12-7	_	<0.05 mg/	(g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3	_	<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
20		benzo[a]pyrene; benzo[def]chrysene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
21		benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2	_	<0.05 mg/	(g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	0	benzo[ghi]perylene 205-883-8 191-24-2	_	<0.05 mg/	(g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		<0.05 mg/	(g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene	_	<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26	0	fluoranthene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
27	0	fluorene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	0	indeno[123-cd]pyrene	_	<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
29		naphthalene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	0	phenanthrene		<0.05 mg/	(g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
31	8	pyrene		<0.05 mg/	<mark>(g</mark>	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
32		phenol		<1 mg/	g	<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
$\vdash$	L	004-001-00-2 <u>203-032-7</u> [108-93-2				Total:	0.0419 %	-	

Key

User supplied data Determinand values ignored for classification, see column 'Conc. Not Used' for reason Determinand defined or amended by HazWasteOnline (see Appendix A) Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound 4 concentration <LOD Below limit of detection CLP: Note 1 Only the metal concentration has been used for classification



Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
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# Sample details

Sample Name: TP107	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil
Sample Depth:		from contaminated sites)
0.50-0.60 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05
Moisture content:		03)
12%		
(no correction)		

#### Hazard properties

None identified

#### **Determinands**

#### Moisture content: 12% No Moisture Correction applied (MC)

#		Determinand CLP index number EC Number CAS Number	CI P Note		User entered data	Conv. Factor	Compound conc.	Classification value	<b>MC Applied</b>	Conc. Not Used
1	8	confirm TPH has NOT arisen from diesel or petrol			Ø					
2	<b>\$</b>	arsenic { arsenic trioxide } 033-003-00-0 215-481-4 1327-53-3			10 mg/kg	1.32	13.203 mg/kg	0.00132 %		
3	4	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9			0.42 mg/kg	2.775	1.166 mg/kg	0.000117 %		
4	*	boron { • boron tribromide/trichloride/trifluoride (combined) } 10294-33-4, 10294-34-5, 7637-07-2			0.6 mg/kg	13.43	8.058 mg/kg	0.000806 %		
5	4	cadmium {		1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< td=""></lod<>
6	\$	chromium { Chromium(III) oxide }	_		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	4	copper { dicopper oxide; copper (I) oxide }			14 mg/kg	1.126	15.762 mg/kg	0.00158 %		
8	*	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6	- '	1	5.6 mg/kg	1.56	8.735 mg/kg	0.00056 %		
9	4	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7			<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
10	*	nickel { nickel dihydroxide } 028-008-00-X 235-008-5 [1] 12054-48-7 [1] 234-348-1 [2] 11113-74-9 [2]			13 mg/kg	1.579	20.533 mg/kg	0.00205 %		
11	*	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewher in this Annex }	e		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
12	*	zinc { zinc chromate }			25 mg/kg	2.774	69.354 mg/kg	0.00694 %		
13	8	рН РН			8.1 pH		8.1 pH	8.1 pH		



#		Determinand CLP index number EC Number CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	IC Applied	Conc. Not Used
14	4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 mg/k	g 1.884	<1.884 mg/kg	<0.000188 %	2	<lod< td=""></lod<>
15	۵	TPH (C6 to C40) petroleum group		<10 mg/k	g	<10 mg/kg	<0.001 %		<lod< td=""></lod<>
16	۵	acenaphthene 201-469-6 83-32-9		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	۵	acenaphthylene 205-917-1 208-96-8		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	0	anthracene 204-371-1 120-12-7		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
20		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 200-028-5 50-32-8		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
21		benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	8	benzo[ghi]perylene 205-883-8  191-24-2		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene 601-048-00-0 205-923-4 218-01-9		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene 601-041-00-2 200-181-8 53-70-3		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26	8	fluoranthene 205-912-4 206-44-0		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
27	۵	fluorene 201-695-5 86-73-7		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	۵	indeno[123-cd]pyrene 205-893-2  193-39-5		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
29		naphthalene 601-052-00-2 202-049-5 91-20-3		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	۲	phenanthrene 201-581-5 85-01-8		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
31	۲	pyrene 204-927-3  129-00-0		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
32		phenol 604-001-00-2 203-632-7 108-95-2		<1 mg/k	g	<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
		· · · ·				Total:	0.0167 %		

Key

User supplied data Determinand values ignored for classification, see column 'Conc. Not Used' for reason Determinand defined or amended by HazWasteOnline (see Appendix A) Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound 4 concentration <LOD Below limit of detection CLP: Note 1 Only the metal concentration has been used for classification



Non Hazardous Waste Classified as 17 05 04	
in the List of Waste	

# Sample details

Sample Name: TP114	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil
0.10-0.20 m Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18% (no correction)		

#### Hazard properties

None identified

#### **Determinands**

#### Moisture content: 18% No Moisture Correction applied (MC)

#		Determinand CLP index number EC Number CAS Nu	Imber	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	<b>MC Applied</b>	Conc. Not Used
1	8	confirm TPH has NOT arisen from diesel or petrol			Ø					
2	<b>\$</b>	arsenic { arsenic trioxide } 033-003-00-0 215-481-4 1327-53-3			18 mg/kg	1.32	23.766 mg/kg	0.00238 %		
3	4	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9			0.86 mg/kg	2.775	2.387 mg/kg	0.000239 %		
4	*	boron { boron tribromide/trichloride/trifluoride (combined) } 10294-33 10294-34-5 7637-07-2	4, 5,		4.3 mg/kg	13.43	57.749 mg/kg	0.00577 %		
5	4	cadmium {		1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< td=""></lod<>
6	4	chromium { • chromium(III) oxide } 215-160-9  1308-38-9			29 mg/kg	1.462	42.385 mg/kg	0.00424 %		
7	4	copper { dicopper oxide; copper (I) oxide }			41 mg/kg	1.126	46.161 mg/kg	0.00462 %		
8	4	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6		1	29 mg/kg	1.56	45.235 mg/kg	0.0029 %		
9	4	mercury { mercury dichloride }           080-010-00-X         231-299-8         7487-94-7			<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
10	*	nickel { nickel dihydroxide } 028-008-00-X 235-008-5 [1] 12054-48-7 234-348-1 [2] 11113-74-5	7 [1] 9 [2]		20 mg/kg	1.579	31.59 mg/kg	0.00316 %		
11	\$	selenium { selenium compounds with the exception cadmium sulphoselenide and those specified else in this Annex }	n of where		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
12	4	zinc { zinc chromate }			100 mg/kg	2.774	277.415 mg/kg	0.0277 %		
13	9	pH PH			7.7 pH		7.7 pH	7.7 pH		



#		Determinand CLP index number EC Number CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	AC Applied	Conc. Not Used
14	~	cyanides { <sup>•</sup> salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 mg/k	g 1.884	<1.884 mg/kg	<0.000188 %		<lod< td=""></lod<>
15	۵	TPH (C6 to C40) petroleum group		47 mg/k	g	47 mg/kg	0.0047 %		
16	۵	acenaphthene 201-469-6 83-32-9		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	0	acenaphthylene 205-917-1 208-96-8		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	8	anthracene 204-371-1 120-12-7		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
20		benzo[a]pyrene; benzo[def]chrysene           601-032-00-3         200-028-5         50-32-8		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
21		benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	۵	benzo[ghi]perylene 205-883-8  191-24-2		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene           601-048-00-0         205-923-4         218-01-9		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene 601-041-00-2 200-181-8 53-70-3		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26	Θ	fluoranthene 205-912-4 206-44-0		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
27	8	fluorene 201-695-5 86-73-7		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	8	indeno[123-cd]pyrene 205-893-2  193-39-5		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
29		naphthalene 601-052-00-2 202-049-5 91-20-3		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	۵	phenanthrene 201-581-5 85-01-8		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
31	۲	pyrene 204-927-3 129-00-0		<0.05 mg/k	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
32		phenol 604-001-00-2 203-632-7 108-95-2		<1 mg/k	g	<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
		· · ·	•			Total:	0.0564 %		

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Ney	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
0	Determinand defined or amended by HazWasteOnline (see Appendix A)
4	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<lod< th=""><th>Below limit of detection</th></lod<>	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

# **Supplementary Hazardous Property Information**



Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
<u>.</u>	

# Sample details

Sample Name:	LoW Code:	
TP114[1]	Chapter:	17: Construction and Demolition Wastes (including excavated soil
Sample Depth:		from contaminated sites)
1.00-1.20 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05
Moisture content:		03)
13%		
(no correction)		

#### Hazard properties

None identified

#### **Determinands**

#### Moisture content: 13% No Moisture Correction applied (MC)

#		Determinand CLP index number EC Number CAS Number	CLP Note	User entered o	lata	Conv. Factor	Compound conc.	Classification value	<b>MC Applied</b>	Conc. Not Used
1	8	confirm TPH has NOT arisen from diesel or petrol	_							
2	<b>\$</b>	arsenic { arsenic trioxide } 033-003-00-0 215-481-4 1327-53-3	_	9.2 r	ng/kg	1.32	12.147 mg/kg	0.00121 %		
3	<b>\$</b>	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9		0.2 r	ng/kg	2.775	0.555 mg/kg	0.0000555 %		
4	*	boron { • boron tribromide/trichloride/trifluoride (combined) } 10294-33-4, 10294-34-5, 7637-07-2		0.2 r	ng/kg	13.43	2.686 mg/kg	0.000269 %		
5	4	cadmium {	_ 1	<0.2 r	ng/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< td=""></lod<>
6	4	chromium { Chromium(III) oxide }		8.2 r	ng/kg	1.462	11.985 mg/kg	0.0012 %		
7	*	copper { dicopper oxide; copper (I) oxide }		19 r	ng/kg	1.126	21.392 mg/kg	0.00214 %		
8	*	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6	1	4.7 r	ng/kg	1.56	7.331 mg/kg	0.00047 %		
9	4	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7	_	<0.3 r	ng/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
10	4	nickel { nickel dihydroxide } 028-008-00-X 235-008-5 [1] 12054-48-7 [1] 234-348-1 [2] 11113-74-9 [2]		12 r	ng/kg	1.579	18.954 mg/kg	0.0019 %		
11	*	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<1 r	ng/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
12	4	zinc { zinc chromate }	+	23 r	ng/kg	2.774	63.805 mg/kg	0.00638 %		
13	9	pH PH		8.2 p	ын		8.2 pH	8.2 pH		



#		Determinand           CLP index number         EC Number         CAS Number	CLP Note	User entered data	Con Facto	v. or Compound conc.	Classification value	IC Applied	Conc. Not Used
14	4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 mg/	kg 1.88	34 <1.884 mg/kg	<0.000188 %		<lod< th=""></lod<>
15	۵	TPH (C6 to C40) petroleum group		<10 mg/	kg	<10 mg/kg	<0.001 %		<lod< td=""></lod<>
16	8	acenaphthene 201-469-6 83-32-9		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	0	acenaphthylene 205-917-1 208-96-8	-	<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	0	anthracene 204-371-1 120-12-7	_	<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
20		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 200-028-5 50-32-8		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
21		benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	۵	benzo[ghi]perylene 205-883-8 191-24-2		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26	8	fluoranthene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
27	۵	fluorene 201-695-5 86-73-7		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	۵	indeno[123-cd]pyrene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
29		naphthalene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	۵	phenanthrene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
31	۵	pyrene		<0.05 mg/	kg	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
32		phenol		<1 mg/	kg	<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
$\vdash$	L	100-001 00 2 <u>200-002-1</u> 100-90-2				Total:	0.0153 %		

Key

User supplied data Determinand values ignored for classification, see column 'Conc. Not Used' for reason Determinand defined or amended by HazWasteOnline (see Appendix A) Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound 4 concentration <LOD Below limit of detection CLP: Note 1 Only the metal concentration has been used for classification


Non Hazardous Waste Classified as 17 05 04	
in the List of Waste	

# Sample details

Sample Name: TP118	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil
Sample Depth:		from contaminated sites)
0.70-0.80 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05
Moisture content:		03)
16%		
(no correction)		

## Hazard properties

None identified

### **Determinands**

### Moisture content: 16% No Moisture Correction applied (MC)

#		Determinand CLP index number EC Number CAS Number	r I		User entered data	Conv. Factor	Compound conc.	Classification value	<b>MC Applied</b>	Conc. Not Used
1	8	confirm TPH has NOT arisen from diesel or petrol								
2	<b>\$</b>	arsenic { arsenic trioxide } 033-003-00-0 215-481-4 1327-53-3			8 mg/kg	1.32	10.563 mg/kg	0.00106 %		
3	4	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9			0.71 mg/kg	2.775	1.97 mg/kg	0.000197 %		
4	*	boron {      boron tribromide/trichloride/trifluoride     (combined) }     10294-33-4,     10294-34-5,     7637-07-2			2.1 mg/kg	13.43	28.203 mg/kg	0.00282 %		
5	4	cadmium {		1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< td=""></lod<>
6	\$	chromium { Chromium(III) oxide }			22 mg/kg	1.462	32.154 mg/kg	0.00322 %		
7	4	copper { dicopper oxide; copper (I) oxide }			27 mg/kg	1.126	30.399 mg/kg	0.00304 %		
8	<b>\$</b>	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6		1	12 mg/kg	1.56	18.718 mg/kg	0.0012 %		
9	4	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7			<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
10	4	nickel { nickel dihydroxide } 028-008-00-X 235-008-5 [1] 12054-48-7 [1] 234-348-1 [2] 11113-74-9 [2]			9.3 mg/kg	1.579	14.689 mg/kg	0.00147 %		
11	\$	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewher in this Annex }	e		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
12	*	zinc { zinc chromate }			32 mg/kg	2.774	88.773 mg/kg	0.00888 %		
13	8	pH PH			7.3 pH		7.3 pH	7.3 pH		



#		Determinand           CLP index number         EC Number         CAS Number	CLP Note	User entered o	data	Conv. Factor	Compound conc.	Classification value	IC Applied	Conc. Not Used
14	4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 1	mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<lod< th=""></lod<>
15	8	TPH (C6 to C40) petroleum group		<10 r	mg/kg		<10 mg/kg	<0.001 %		<lod< td=""></lod<>
16	8	acenaphthene 201-469-6 83-32-9		<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	8	acenaphthylene 205-917-1 208-96-8	_	<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	8	anthracene 204-371-1 120-12-7	_	<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3	_	<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
20		benzo[a]pyrene; benzo[def]chrysene		<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
21		benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2	_	<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	0	benzo[ghi]perylene 205-883-8 191-24-2	_	<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene		<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene		<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26	0	fluoranthene		<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
27	0	fluorene		<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	0	indeno[123-cd]pyrene	_	<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
29		naphthalene		<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	0	phenanthrene		<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
31	8	pyrene		<0.05 r	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
32		phenol		<1 r	mg/kg		<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
$\vdash$	L	004-001-00-2 <u>203-032-7</u> [108-93-2					Total:	0.0236 %		

Key



Non Hazardous Waste Classified as 17 05 04	
in the List of Waste	

# Sample details

Sample Name: TP119	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil
Sample Depth:	Entry	from contaminated sites)
Moisture content:	Lifti y.	03)
13%		
(no correction)		

## Hazard properties

None identified

### **Determinands**

### Moisture content: 13% No Moisture Correction applied (MC)

#		Determinand CLP index number EC Number CAS	3 Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	AC Applied	Conc. Not Used
1	8	confirm TPH has NOT arisen from diesel or pe	etrol	0	Ø					
2	*	arsenic { arsenic trioxide } 033-003-00-0 215-481-4 1327-53	3-3		3.7 mg/kg	1.32	4.885 mg/kg	0.000489 %		
3	4	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-50	6-9		0.68 mg/kg	2.775	1.887 mg/kg	0.000189 %		
4	*	boron { • boron tribromide/trichloride/trifluorid (combined) } 10294- 10294- 7637-0	<b>le</b> 33-4, 34-5, 7-2		1.8 mg/kg	13.43	24.174 mg/kg	0.00242 %		
5	4	cadmium {	3-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< td=""></lod<>
6	4	chromium { Chromium(III) oxide } 215-160-9 1308-36	8-9		23 mg/kg	1.462	33.616 mg/kg	0.00336 %		
7	4	copper { dicopper oxide; copper (I) oxide }	9-1		28 mg/kg	1.126	31.525 mg/kg	0.00315 %		
8	*	lead { lead chromate } 082-004-00-2 231-846-0 7758-9	7-6	1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
9	4	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-9-	4-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
10	*	nickel { nickel dihydroxide } 028-008-00-X 235-008-5 [1] 12054- 234-348-1 [2] 11113-	48-7 [1] 74-9 [2]		12 mg/kg	1.579	18.954 mg/kg	0.0019 %		
11	\$	selenium { selenium compounds with the exce cadmium sulphoselenide and those specified o in this Annex }	eption of elsewhere		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
12	*	zinc { <mark>zinc chromate</mark> }			26 mg/kg	2.774	72.128 mg/kg	0.00721 %		
13	9	pH PH			7.9 pH		7.9 pH	7.9 pH		



#		Determinand           CLP index number         EC Number         CAS Number	CLP Note	User entered da	ata	Conv. Factor	Compound conc.	Classification value	IC Applied	Conc. Not Used
14	4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 mį	ıg/kg	1.884	<1.884 mg/kg	<0.000188 %		<lod< th=""></lod<>
15	۵	TPH (C6 to C40) petroleum group		<10 m(	ig/kg		<10 mg/kg	<0.001 %		<lod< td=""></lod<>
16	8	acenaphthene 201-469-6 83-32-9		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	0	acenaphthylene 205-917-1 208-96-8	_	<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	0	anthracene 204-371-1 120-12-7	_	<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3	_	<0.05 m	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
20		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 200-028-5 50-32-8		<0.05 m	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
21		benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2	_	<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	۵	benzo[ghi]perylene 205-883-8 191-24-2	_	<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene		<0.05 m	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene		<0.05 m	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26	8	fluoranthene	_	<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
27	۵	fluorene 201-695-5 86-73-7	_	<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	۵	indeno[123-cd]pyrene		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
29		naphthalene		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	۵	phenanthrene		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
31	۵	pyrene		<0.05 mg	ig/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
32		phenol		<1 m	g/kg		<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
$\vdash$	L	100-001 00 2 <u>200-002-1</u> 100-90-2				(	Total:	0.0215 %		

Key



Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
•	

# Sample details

Sample Name: TP120 Sample Depth:	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.60-0.70 m Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
5% (no correction)		

## Hazard properties

None identified

### **Determinands**

### Moisture content: 5% No Moisture Correction applied (MC)

#		CLP index number EC Number CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	8	confirm TPH has NOT arisen from diesel or petrol	-						
2	*	arsenic { arsenic trioxide } 033-003-00-0 215-481-4 1327-53-3	_	14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	*	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9	_	0.46 mg/kg	2.775	1.277 mg/kg	0.000128 %		
4	4	boron { • boron tribromide/trichloride/trifluoride (combined) } 10294-33-4, 10294-34-5, 7637-07-2		0.9 mg/kg	13.43	12.087 mg/kg	0.00121 %		
5	4	cadmium {	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<lod< th=""></lod<>
6	<b>\$</b>	chromium { Chromium(III) oxide }		14 mg/kg	1.462	20.462 mg/kg	0.00205 %		
7	\$	copper { dicopper oxide; copper (I) oxide }		25 mg/kg	1.126	28.147 mg/kg	0.00281 %		
8	~	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6	_ 1	7.1 mg/kg	1.56	11.075 mg/kg	0.00071 %		
9	*	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7	_	<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< th=""></lod<>
10	4	nickel { nickel dihydroxide } 028-008-00-X 235-008-5 [1] 12054-48-7 [1] 234-348-1 [2] 11113-74-9 [2]	_	18 mg/kg	1.579	28.431 mg/kg	0.00284 %		
11	<b>\$</b>	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< th=""></lod<>
12	*	zinc { zinc chromate }		29 mg/kg	2.774	80.45 mg/kg	0.00805 %		
13	8	pH		8.2 pH		8.2 pH	8.2 pH		



#		Determinand CLP index number EC Number CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	AC Applied	Conc. Not Used
14	~	cyanides { <sup>•</sup> salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 mg/k	<b>1.884</b>	<1.884 mg/kg	<0.000188 %		<lod< td=""></lod<>
15	۵	TPH (C6 to C40) petroleum group		19 mg/k	9	19 mg/kg	0.0019 %		
16	۵	acenaphthene 201-469-6 83-32-9		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	8	acenaphthylene 205-917-1 208-96-8		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	•	anthracene 204-371-1 120-12-7		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
20		benzo[a]pyrene; benzo[def]chrysene           601-032-00-3         200-028-5         50-32-8		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
21		benzo[b]fluoranthene           601-034-00-4         205-911-9         205-99-2		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	8	benzo[ghi]perylene 205-883-8 191-24-2		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene           601-048-00-0         205-923-4         218-01-9		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene           601-041-00-2         200-181-8         53-70-3		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26	8	fluoranthene 205-912-4 206-44-0		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
27	0	fluorene 201-695-5 86-73-7		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	0	indeno[123-cd]pyrene 205-893-2  193-39-5		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
29		naphthalene           601-052-00-2         202-049-5         91-20-3		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	•	phenanthrene 201-581-5 85-01-8		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
31	۲	pyrene 204-927-3 129-00-0		<0.05 mg/k	9	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
32		phenol 604-001-00-2 203-632-7 108-95-2		<1 mg/k	9	<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
		· · · · · · · · · · · · · · · · · · ·				Total:	0.0222 %		

Kev

хсу	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
0	Determinand defined or amended by HazWasteOnline (see Appendix A)
4	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<lod< th=""><th>Below limit of detection</th></lod<>	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

# Supplementary Hazardous Property Information

HP 3(i) on Flam. Liq. 1; H224, Flam. Liq. 2; H225, Flam. Liq. 3; H226: Force this Hazardous property to non hazardous because No significant sources of volatile contamination noted.



Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
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# Sample details

Sample Name: TP121	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil
Sample Depth:		from contaminated sites)
0.10-0.20 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05
Moisture content:		03)
15%		
(no correction)		

## Hazard properties

None identified

### **Determinands**

### Moisture content: 15% No Moisture Correction applied (MC)

#			Determinand		Note	User entered data	User entered data Conv. Factor Compound conc.		Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	CLP					MC	
1	8	confirm TPH has N	IOT arisen from dies	sel or petrol		R					
2	4	arsenic { arsenic tr	ioxide }			9.4 mg/ka	1.32	12.411 mg/kg	0.00124 %		
		033-003-00-0	215-481-4	1327-53-3							
3	4	beryllium { <mark>berylliur</mark>	m oxide }			0.84 ma/ka	2.775	2.331 ma/ka	0.000233 %		
Ŭ		004-003-00-8	215-133-1	1304-56-9				21001			
	4	boron { <sup>•</sup> boron tri (combined) }	bromide/trichloride/	trifluoride							
4		(		10294-33-4, 10294-34-5, 7637-07-2	_	5.6 mg/kg	13.43	75.208 mg/kg	0.00752 %		
5	æ	cadmium { cadmiu	m sulfide }		1	-0.2 mg///	1 205	-0.257 ma/ka	-0.00002.9/		
5		048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.200	<0.257 Hig/kg	<0.00002 %		<lod< td=""></lod<>
6	4	chromium { • chro	mium(III) oxide }	1208 28 0		28 mg/kg	1.462	40.924 mg/kg	0.00409 %		
			213-100-9	1308-38-9							
7		copper { <sup>a</sup> dicoppe	er oxide; copper (I) o	<mark>oxide</mark> }		42 mg/kg	1.126	47.287 mg/kg	0.00473 %		
		029-002-00-X	215-270-7	1317-39-1							
8	4	lead { lead chroma	te }		1	39 mg/kg	1.56	60.833 mg/kg	0.0039 %		
		082-004-00-2	231-846-0	7758-97-6							
9	4	mercury { mercury	dichloride }			<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<lod< th=""></lod<>
		080-010-00-X	231-299-8	7487-94-7							
10	4	nickel { nickel dihyo	droxide }			10 mg///	1 570	20.01 ma/ka	0.002.9/		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		19 mg/kg	1.579	30.01 mg/kg	0.003 %		
11	4	selenium { <mark>seleniur</mark> cadmium sulphose in this Annex }	n compounds with t lenide and those sp	he exception of ecified elsewhere		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< th=""></lod<>
		034-002-00-8									
12	4	zinc { zinc chromat	e }			78 ma/ka	2.774	216.383 ma/ka	0.0216 %		
		024-007-00-3			1						
13	8	pН		PH		7 pH		7 pH	7рН		



#		Determinand	P Note	User entered	data	Conv. Factor	Compound conc.	Classification value	C Applied	Conc. Not Used
-			ರ						м	
14	~	cyanides { Salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1	mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<lod< td=""></lod<>
15		TPH (C6 to C40) petroleum group		~10	ma/ka		<10 mg/kg	<0.001 %		
		ТРН			шу/ку		<10 mg/kg	<0.001 //		
16	0	acenaphthene 201-469-6 83-32-9		<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	8	acenaphthylene		<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
		205-917-1 208-96-8	-							
18	۲	204-371-1 120-12-7	-	<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene		<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
		601-033-00-9 200-280-6 p6-55-3	-							
20		601-032-00-3 200-028-5 50-32-8	-	<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
-		benzo[b]fluoranthene	+							
21		601-034-00-4 205-911-9 205-99-2	-	<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	8	benzo[ghi]perylene		<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
		205-883-8 191-24-2	_							
23		601-036-00-5 205-916-6 207-08-9	-	<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene		<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
		601-048-00-0 205-923-4 218-01-9	+							
25		601-041-00-2 200-181-8 53-70-3		<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26		fluoranthene		<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
-		205-912-4 206-44-0								
27	-	201-695-5 86-73-7	-	<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	٥	indeno[123-cd]pyrene		<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
		205-893-2 [193-39-5 naphthalene		-0.05			.0.05 mg/kg	-0.000005.0/		
29		601-052-00-2 202-049-5 91-20-3		<0.05	тід/кд		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	۲	phenanthrene		<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
-	_	pyrene	+							
31		204-927-3  129-00-0	-	<0.05	mg/kg		<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22		phenol		-1	ma/ka			<0.0001 %		
		604-001-00-2 203-632-7 108-95-2			ту/ку			<b>10.0001</b> /0		
							Total:	0.048 %		

Key



Non Hazardous Waste	
Classified as 17 05 04	
in the List of Waste	
•	

# Sample details

ample Name:	LoW Code:	17. Construction and Demolition Wester (including everyted coil
P125	Chapter	17. Construction and Demontion wastes (including excavated soil
ample Depth:		from contaminated sites)
40-0.50 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05
loisture content:		03)
2%		
no correction)		

## Hazard properties

None identified

### **Determinands**

### Moisture content: 12% No Moisture Correction applied (MC)

#			Determinand	CAC Number	P Note	User entered data	User entered data Conv. Facto		Classification value	: Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	CL					Σ	
1	Θ	confirm TPH has N	OT arisen from dies	sel or petrol							
2	4	arsenic { arsenic tri	oxide }		_	16 mg/k	g 1.32	21.125 mg/kg	0.00211 %		
		033-003-00-0	215-481-4	1327-53-3							
3	-4	beryllium { berylliur	n oxide }	4004 50 0		1.3 mg/k	g 2.775	5 3.608 mg/kg	0.000361 %		
		004-003-00-8	215-133-1	1304-56-9							
	4	boron { 🎴 boron tri	bromide/trichloride/t	rifluoride							
4		(combined) }				2.2 ma/k	13.43	29 546 mg/kg	0.00295 %		
·				10294-33-4,		2.2 119/1	9 10.10	20.010 mg/ng	0.00230 /1		
				7637-07-2							
-		cadmium { cadmiur	n sulfide }					0.057 //	0.00000.0/		1.00
5	~	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/k	g 1.285	о <0.257 mg/кg	<0.00002 %		<lod< td=""></lod<>
6	4	chromium { 🏾 Chro	mium(III) oxide }			26 mg/k	g 1.462	2 38 mg/kg	0.0038 %		
			215-160-9	1308-38-9							
7	4	copper { <sup>®</sup> <mark>dicoppe</mark>	er oxide; copper (I) o	<mark>xide</mark> }		26 mg/k	g 1.126	5 29.273 mg/kg	0.00293 %		
		029-002-00-X	215-270-7	1317-39-1							
8	4	lead { lead chromat	te }		1	14 mg/k	g 1.56	21.837 mg/kg	0.0014 %		
		082-004-00-2	231-846-0	7758-97-6							
9	4	mercury { mercury	dichloride }			<0.3 mg/k	g 1.353	<0.406 mg/kg	<0.0000406 %		<lod< td=""></lod<>
		080-010-00-X	231-299-8	7487-94-7							
10	4	nickel { nickel dihyd	lroxide }			50 //	4 5 7 6	70.075 //	0.0070.0/		
10		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		50 mg/k	g 1.578	9 78.975 mg/kg	0.0079 %		
11	4	selenium { seleniur cadmium sulphose in this Annex }	n compounds with t lenide and those sp	he exception of ecified elsewhere		<1 mg/k	g 2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
		034-002-00-8									
12	4	zinc { zinc chromat	e}			86 ma/k	a 2.774	238.577 ma/ka	0.0239 %		
<u> </u>		024-007-00-3									
13	8	рН				7.9 pH		7.9 pH	7.9 pH		
				РН							



#		Determinand CLP index number EC Number CAS Number	CLP Note	User entered data	Conv. Facto	r Compound conc.	Classification value	AC Applied	Conc. Not Used
14	4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<1 mg/	.g 1.884	<1.884 mg/kg	<0.000188 %		<lod< td=""></lod<>
15	۵	TPH (C6 to C40) petroleum group		<10 mg/	g	<10 mg/kg	<0.001 %		<lod< td=""></lod<>
16	۵	acenaphthene 201-469-6 83-32-9		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
17	۵	acenaphthylene 205-917-1 208-96-8		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
18	9	anthracene 204-371-1 120-12-7		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
19		benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
20		benzo[a]pyrene; benzo[def]chrysene           601-032-00-3         200-028-5         50-32-8		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
21		benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
22	۵	benzo[ghi]perylene 205-883-8  191-24-2		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
23		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
24		chrysene 601-048-00-0 205-923-4 218-01-9		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
25		dibenz[a,h]anthracene 601-041-00-2 200-181-8 53-70-3		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
26	0	fluoranthene 205-912-4 206-44-0		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
27	0	fluorene 201-695-5 86-73-7		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
28	8	indeno[123-cd]pyrene 205-893-2  193-39-5		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
29		naphthalene 601-052-00-2 202-049-5 91-20-3		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
30	۲	phenanthrene 201-581-5 85-01-8		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
31	۵	pyrene 204-927-3 129-00-0		<0.05 mg/	g	<0.05 mg/kg	<0.000005 %		<lod< td=""></lod<>
32		phenol 604-001-00-2 203-632-7 108-95-2		<1 mg/	g	<1 mg/kg	<0.0001 %		<lod< td=""></lod<>
		· · · ·				Total:	0.047 %		

Key



### Appendix A: Classifier defined and non CLP determinands

### • confirm TPH has NOT arisen from diesel or petrol

Description/Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11) Data source: WM3 1st Edition 2015 Data source date: 25/05/2015 Risk Phrases: None. Hazard Statements: None.

#### • boron tribromide/trichloride/trifluoride (combined) (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Conversion factor: 13.43 Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride Data source: N/A Data source date: 06/08/2015 Risk Phrases: R14, T+ R26/28, C R34, C R35 Hazard Statements: EUH014, Acute Tox. 2 H330, Acute Tox. 2 H300, Skin Corr. 1A H314, Skin Corr. 1B H314

• chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462 Description/Comments: Data from C&L Inventory Database Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database Data source date: 17/07/2015 Risk Phrases: R20, R22, R36, R37, R38, R42, R43, R50/53, R60, R61 Hazard Statements: Acute Tox. 4 H332, Acute Tox. 4 H302, Eye Irrit. 2 H319, STOT SE 3 H335, Skin Irrit. 2 H315, Resp. Sens. 1 H334, Skin Sens. 1 H317, Repr. 1B H360FD, Aquatic Acute 1 H400, Aquatic Chronic 1 H410

#### • dicopper oxide; copper (I) oxide (EC Number: 215-270-7, CAS Number: 1317-39-1)

CLP index number: 029-002-00-X Data source: Regulation (EU) 2016/1179 of 19 July 2016 (ATP9) Additional Risk Phrases: N R50/53, N R50/53 >= 0.25 % Additional Hazard Statement(s): None. Reason for additional Hazards Statement(s)/Risk Phrase(s): 10/10/2016 - N R50/53 risk phrase sourced from: WM3 v1 still uses ecotoxic risk phrases 10/10/2016 - N R50/53 >= 0.25 % risk phrase sourced from: WM3 v1 still uses ecotoxic risk phrases

• pH (CAS Number: PH)

Description/Comments: Appendix C4 Data source: WM3 1st Edition 2015 Data source date: 25/05/2015 Risk Phrases: None. Hazard Statements: None.

#### • salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

CLP index number: 006-007-00-5 Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1) Additional Risk Phrases: None. Additional Hazard Statement(s): EUH032 >= 0.2 % Reason for additional Hazards Statement(s)/Risk Phrase(s): 14/12/2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

### • TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013 Data source: WM3 1st Edition 2015 Data source date: 25/05/2015 Risk Phrases: R10, R45, R46, R51/53, R63, R65 Hazard Statements: Flam. Liq. 3 H226, Asp. Tox. 1 H304, STOT RE 2 H373, Muta. 1B H340, Carc. 1B H350, Repr. 2 H361d, Aquatic Chronic 2 H411



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#### • ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4 Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6) Additional Risk Phrases: None. Additional Hazard Statement(s): Carc. 2 H351 Reason for additional Hazards Statement(s)/Risk Phrase(s): 03/06/2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

### acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database Data source date: 17/07/2015 Risk Phrases: R36, R37, R38, N R50/53, N R51/53 Hazard Statements: Eye Irrit. 2 H319, STOT SE 3 H335, Skin Irrit. 2 H315, Aquatic Acute 1 H400, Aquatic Chronic 1 H410, Aquatic Chronic 2 H411

• acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database Data source date: 17/07/2015 Risk Phrases: R22, R26, R27, R36, R37, R38 Hazard Statements: Acute Tox. 4 H302, Acute Tox. 1 H330, Acute Tox. 1 H310, Eye Irrit. 2 H319, STOT SE 3 H335, Skin Irrit. 2 H315

• anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database Data source date: 17/07/2015 Risk Phrases: R36, R37, R38, R43, N R50/53 Hazard Statements: Eye Irrit. 2 H319, STOT SE 3 H335, Skin Irrit. 2 H315, Skin Sens. 1 H317, Aquatic Acute 1 H400, Aquatic Chronic 1 H410

#### • benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015 Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database Data source date: 23/07/2015 Risk Phrases: N R50/53 Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

<sup>e</sup> fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database Data source date: 21/08/2015 Risk Phrases: Xn R22, N R50/53 Hazard Statements: Acute Tox. 4 H302, Aquatic Acute 1 H400, Aquatic Chronic 1 H410

• fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database Data source date: 06/08/2015 Risk Phrases: N R50/53 Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database Data source date: 06/08/2015 Risk Phrases: R40 Hazard Statements: Carc. 2 H351

• phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database Data source date: 06/08/2015 Risk Phrases: R22, R36, R37, R38, R40, R43, N R50/53 Hazard Statements: Acute Tox. 4 H302, Eye Irrit. 2 H319, STOT SE 3 H335, Carc. 2 H351, Skin Sens. 1 H317, Aquatic Acute 1 H400 , Aquatic Chronic 1 H410, Skin Irrit. 2 H315



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Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014 Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database Data source date: 21/08/2015 Risk Phrases: Xi R36/37/38, N R50/53

Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}
Worst case species based on risk phrases
beryllium {beryllium oxide}
Worst case species based on risk phrases
boron {boron tribromide/trichloride/trifluoride (combined)}
Worst case species based on risk phrases
cadmium {cadmium sulfide}
Worst case species based on risk phrases
chromium {chromium(III) oxide}
No significant Chromium VI recorded.
copper {dicopper oxide; copper (I) oxide}
Most likely common species
lead {lead chromate}
Worst case species based on risk phrases
mercury {mercury dichloride}
Worst case species based on risk phrases
nickel {nickel dihydroxide}
Worst case species based on risk phrases
selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}
Worst case species based on risk phrases
zinc {zinc chromate}
Worst case species based on risk phrases
cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}
Worst case species

## **Appendix C: Version**

HazWasteOnline Classification Engine: WM3 1st Edition, May 2015 HazWasteOnline Classification Engine Version: 2017.248.3389.6849 (05 Sep 2017) HazWasteOnline Database: 2017.261.3397.6865 (18 Sep 2017)





Report created by Richard Robinson on 21/09/2017

This classification utilises the following guidance and legislation: WM3 - Waste Classification - May 2015 CLP Regulation - Regulation 1272/2008/EC of 16 December 2008 1st ATP - Regulation 790/2009/EC of 10 August 2009 2nd ATP - Regulation 286/2011/EC of 10 March 2011 3rd ATP - Regulation 618/2012/EU of 10 July 2012 **4th ATP** - Regulation 487/2013/EU of 8 May 2013 **Correction to 1st ATP** - Regulation 758/2013/EU of 7 August 2013 5th ATP - Regulation 944/2013/EU of 2 October 2013 6th ATP - Regulation 605/2014/EU of 5 June 2014 WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014 Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014 7th ATP - Regulation 2015/1221/EU of 24 July 2015 8th ATP - Regulation (EU) 2016/918 of 19 May 2016 9th ATP - Regulation (EU) 2016/1179 of 19 July 2016 10th ATP - Regulation (EU) 2017/776 of 4 May 2017 POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004 1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010





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