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Phase 2 Geo-Environmental Assessment

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EXECUTIVE SUMMARY	
Site Address	Land off Lakeview Drive, Bicester, Oxfordshire, OX26 1DE
Proposed Development	The proposed development is anticipated to comprise the development of up to 55,000m^2 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	The ground investigation comprised the advancement of 12 cable percussive 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 vibro stone 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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TABLES

FIGURES (included in main text)

DRAWINGS

APPENDICES

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^2 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 Thursday13th September 2017 and comprised the following;

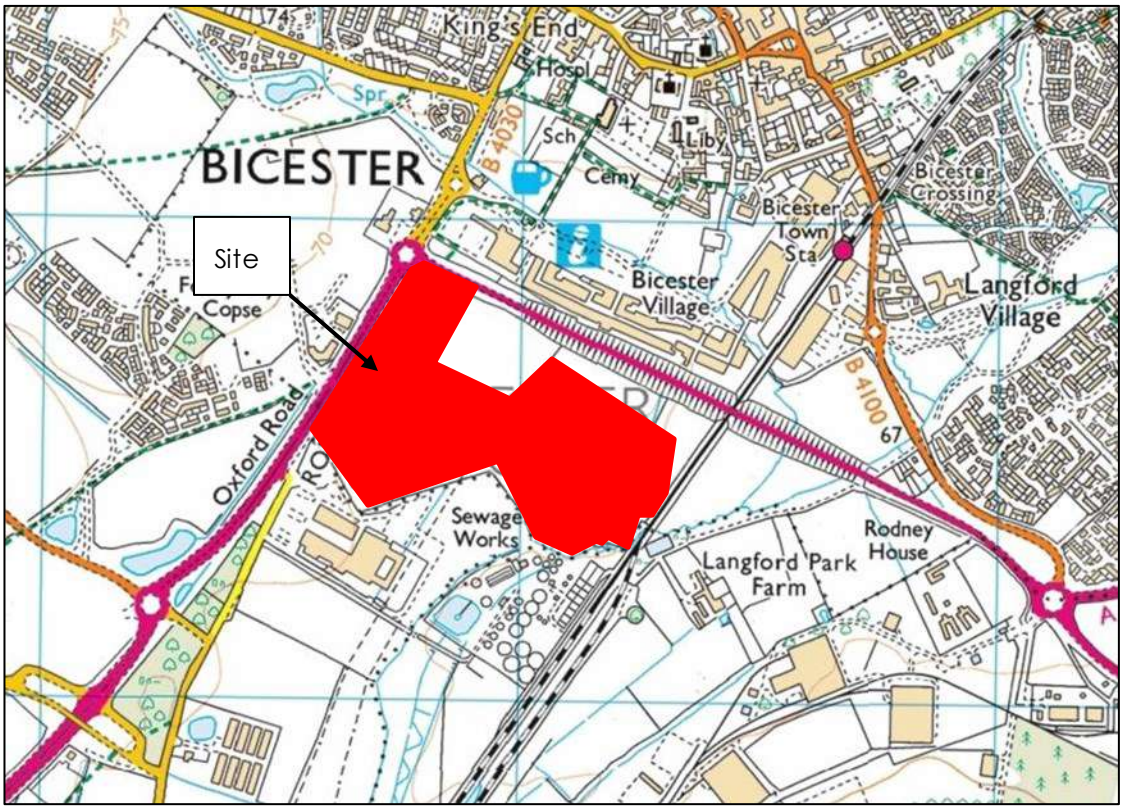
- Non-intrusive survey of excavation locations for underground utilities;
- 26 machine excavated trial pits;
- 12 cable percussive boreholes;
- Insitu TRL DCP testing at select location;
- Four gas and groundwater monitoring visits;
- Chemical analysis of soils and groundwater; and
- Geotechnical testing 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**.

Figure 1 Site Location Plan



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).

Table 1 Preliminary Conceptual Site Model

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
S1: On site: Ground conditions and historical site uses, most notably agricultural uses, infilled ponds, out buildings (unknown uses) & construction yard (temporary). Possible contaminants to include – agrochemicals, fuel oils, heavy metals and hazardous ground gases.	**P1:** Direct contact and incidental ingestion.	**R1**: 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 groundwater at the site that are likely to impact construction workers and future site users via ingestion, direct contact, and inhalation pathways. If present, it is likely that these contaminant linkages will be easily severed through 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. 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.
		R2: Future site users (commercial)	Md	Ul	L	
	P2: Vertical migration of contaminants in the soil leachate.	**R3:** Underlying Secondary A Aquifer (RTD)	Md	Lw	M/L	
		R4: Underlying Secondary A Aquifer (Cornbrash Formation)	Md	Ul	L	
	P3: Migration and accumulation of ground gasses in enclosed spaces.	**R1**: Construction personnel	Sv	Lw	M	Ground gas assessment in line with guidance detailed in CIRIA 665 and BS8485: 2015 should be undertaken to calculate the gassing regime beneath the site.
		R2: Future site users (commercial)				
S2: Offsite – Land uses including the STW, petrol filling station and infilled ground.	**P4**: Leaching and permeation through the soil profile and migration	**R3:** Underlying Secondary A Aquifer (RTD)	Md	Ul	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.
		R4: Underlying Secondary A				

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
Contaminants to potentially include hydrocarbons, heavy metals, inorganics, asbestos, organic compounds, micro-organisms and hazardous ground gases.		Aquifer (Cornbrash Formation)				Low permeability of the surrounding geology may have reduced leaching of contaminated groundwater onto site.
	P5: Lateral migration of contaminated groundwater	**R5:** Unnamed Primary River	Md	Ul	L	
	P3: Migration and accumulation of ground gasses in enclosed spaces.	**R2**: Future site users (commercial)	Sv	Ul	M/L	

VH = Very High, H = High, M = Moderate, M/L = Moderate/Low, L = Low, VL = Very Low

KEY: Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor Hi = High, Li = Likely, Lw = Low Likelihood, Ul = Unlikely

5 PHASE II ENVIRONMENTAL AND GEOTECHNICAL GROUND INVESTIGATION

Scope of Works

5.1 Intrusive ground investigation works were undertaken between 14th August and 13th 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.

Table 2 Borehole Installation Summary

Location	Slotted Well Screen (m bgl)		Targeted Geology
	Top	Base	
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

Chemical Analytical Strategy

Soil Strategy

5.2 Selected soil samples collected from exploratory hole locations were sent to I2 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 I2 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 3 Summary of Ground Conditions

Stratum	Top Depth (m)		Base Depth (m)		Thickness (m)		SPT N_{60} Value	
	Min	Max	Min	Max	Min	Max	Min	Max
Topsoil	Ground level		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
River Terrace 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 Proven		55 (refusal)	59 (refusal)

Geological Descriptions

Topsoil

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.

Alluvium

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_{60} 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 Results Summary

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

River Terrace Deposits

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_{60} 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_{60} 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_{60} 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_{60} 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**.

Table 5 DCP TRL Results Summary

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

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

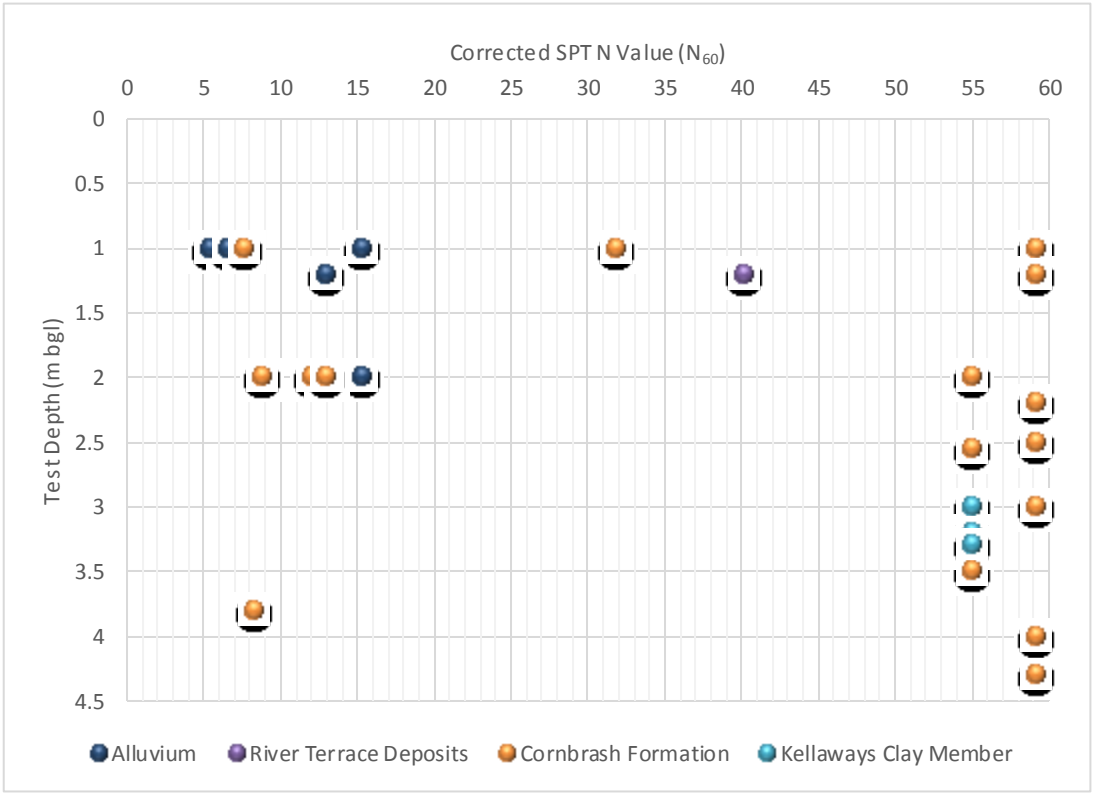
Location	Stratum	Min CBR (%)	Max CBR (%)
TP101	Made Ground	9.8	29.1
TP103	Made Ground	28.0	>100*
TP104	Cornbrash Formation	4.2	>100
TP105	Alluvium	3.1	44.7
TP107	Alluvium	5.8	21.8
TP108	Alluvium	3.1	39.8
TP111	Alluvium	4.2	29.6
TP112	Alluvium	2.6	7.5
TP119	Alluvium	2.6	3.3
TP120	River Terrace Deposits	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 Strikes

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	Seepage noted
TP102	1.7	Cornbrash Formation	-
TP103	1.7	Cornbrash Formation	Steady ingress
TP104	1.6	Cornbrash Formation	Slow ingress
TP105	1.25	Cornbrash Formation	Seepage noted
TP106	1.1	River Terrace Deposits	Steady ingress
TP107	1.1	River Terrace Deposits	Steady ingress
TP108	2.5	Cornbrash Formation	Seepage noted
TP110	2.15	Kellaways Clay Member	Slow ingress
TP111	1.2	River Terrace Deposits	Steady ingress
TP112	1.15	River Terrace Deposits	Slow ingress
TP113	1.1	Alluvium	Seepage noted
TP113	1.5	River Terrace Deposits	Steady ingress
TP114	1.35	River Terrace Deposits	-
TP115	3.0	Cornbrash Formation	Seepage noted
TP117	2.5	Cornbrash Formation	-
TP118	2.95	Cornbrash Formation	Rising to 2.85m after 20 minutes
TP120	3.0	Cornbrash Formation	Seepage noted
TP121	3.3	Cornbrash Formation	Slow ingress noted
TP124	1.1	Cornbrash Formation	Seepage noted

6.29 Standing water levels were recorded within the installed boreholes on four occasions between 24th August and 13th 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^2 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 - Description - Depth	Foundation Size & Type					
	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.

Piles

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^2. 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^2. 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 re-engineering 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 24th August and 13th 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**.

Table 9 Summary of Recorded Ground Gas Results

Borehole ID	Targeted Geology	Steady Flow (l/hr)		Carbon Dioxide (%v/v)		Methane (%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

Borehole ID	Targeted Geology	Steady Flow (l/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 13th September 2017) and 1013mb (recorded on 24th 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 (13th September 2017), as static during one monitoring visits (6th September 2017) and falling during two monitoring visits 24th & 31st 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 31st 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 31st 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 24th & 31st 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.

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

Table 10 Commercial Exposure Pathways

Source	Shallow Soils		Deep Soils
Pathway	**Commercial / Industrial with managed landscaped areas**	**Commercial / Industrial with Hard standing areas**	**Commercial / Industrial**
Ingestion of Soil	✓	×	×
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	✓	×	×

Source	Shallow Soils		Deep Soils
Inhalation of fugitive site derived household dust	✓	×	×
Inhalation of vapours outside	✓	✓	✓
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

Chemical

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. .

Asbestos

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/l)	Location and depth (m bgl)	EQS (µg/l)	UK DWS (µg/l)
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.

Table 12 Summary of Recorded Exceedances in Groundwater

Contaminant	Range of Recorded Exceedances (µg/l)	EQS Screening Criteria (µg/l)	UK DWS Screening Criteria (µg/l)	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

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**.

Sources

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

Pathway

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

Receptor

- 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.

Table 13 Revised Conceptual Site Model

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
S1: Made Ground – presence of asbestos fibres and hotspot of Total TPH	**P1:** Inhalation of dust particles and dermal contact	**R1:** End site users	Md	Ul	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	Md	Lw	M/L	The risks to construction and ground workers can be minimised by the adoption of appropriate PPE and respiratory protective equipment (RPE). It is recommended the ground surface is kept damp to minimise the movement of free fibres.
S4: Elevated inorganic contaminants (sulphate) within the groundwater beneath the site.	**P3:** Migration of contaminated groundwater	**R3:** Concrete foundations	Md	Lw	M/L	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 development is likely to be predominantly covered by buildings and hard standing surface cover, therefore limiting leaching and migration of contaminants.
		R4: Tertiary rivers on site (drainage ditches)	Mi	Lw	L	

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation

VH = Very High, H = High, M = Moderate, M/L = Moderate/Low, L = Low, VL = Very Low

KEY: Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor Hi = High, Li = Likely, Lw = Low Likelihood, Ul = 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.

Environmental

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

1. British Standards Institute, (BSI), BS 8485:2015, Code of Practice for the characterization and remediation from ground gas in affected developments

2. British Standards Institute, (BSI), BS 8576:2013, Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs)

3. British Standards Institute, (BSI), BS 10175:2011+A1:2013, Investigation of Contaminated Sites – Code of Practice

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14. Environment Agency report CLR11 'Model Procedures for the Management of Land Contamination'.

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16. Environment Agency 2008, Human health toxicological assessment of contaminants in soil Science Report – SC050021/SR2

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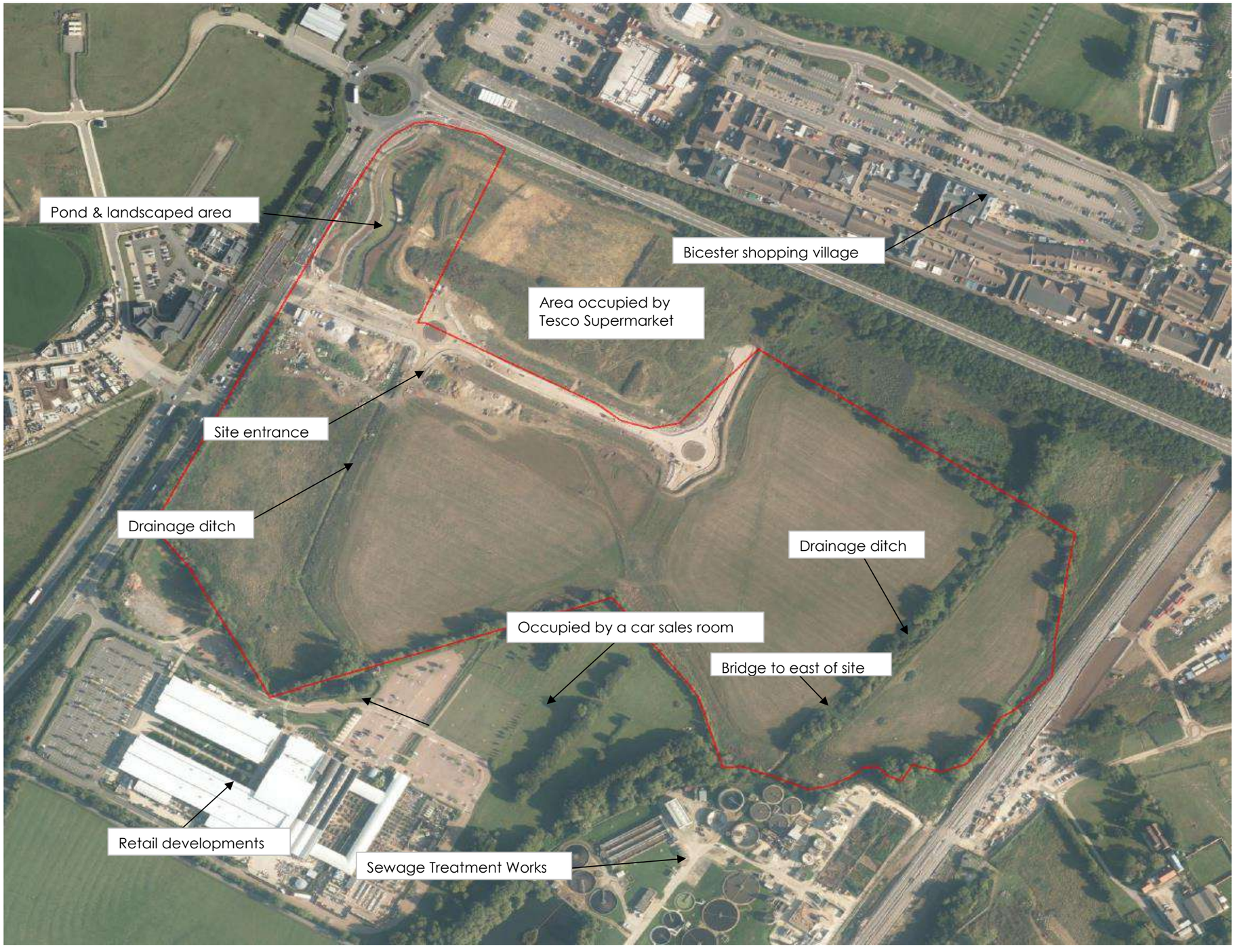
DRAWINGS

DRAWING 1

SITE LAYOUT PLAN



NOTES

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS MUCT BE CHECKED/ VERIFIED ON SITE. IF IN DOUBT ASK.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.

3.ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS IN METERES UNLESS NOTED OTHERWISE.

4. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

LEGEND

Site boundary

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Client:

SLADEN ESTATES

Project Title:

LAKEVIEW DRIVE, BICESTER

Drawing Title:

SITE LAYOUT PLAN

Scale:	Date:	Drawn:	Authorised:
Not to Scale	21.08.17	L.Cross	R.Robinson

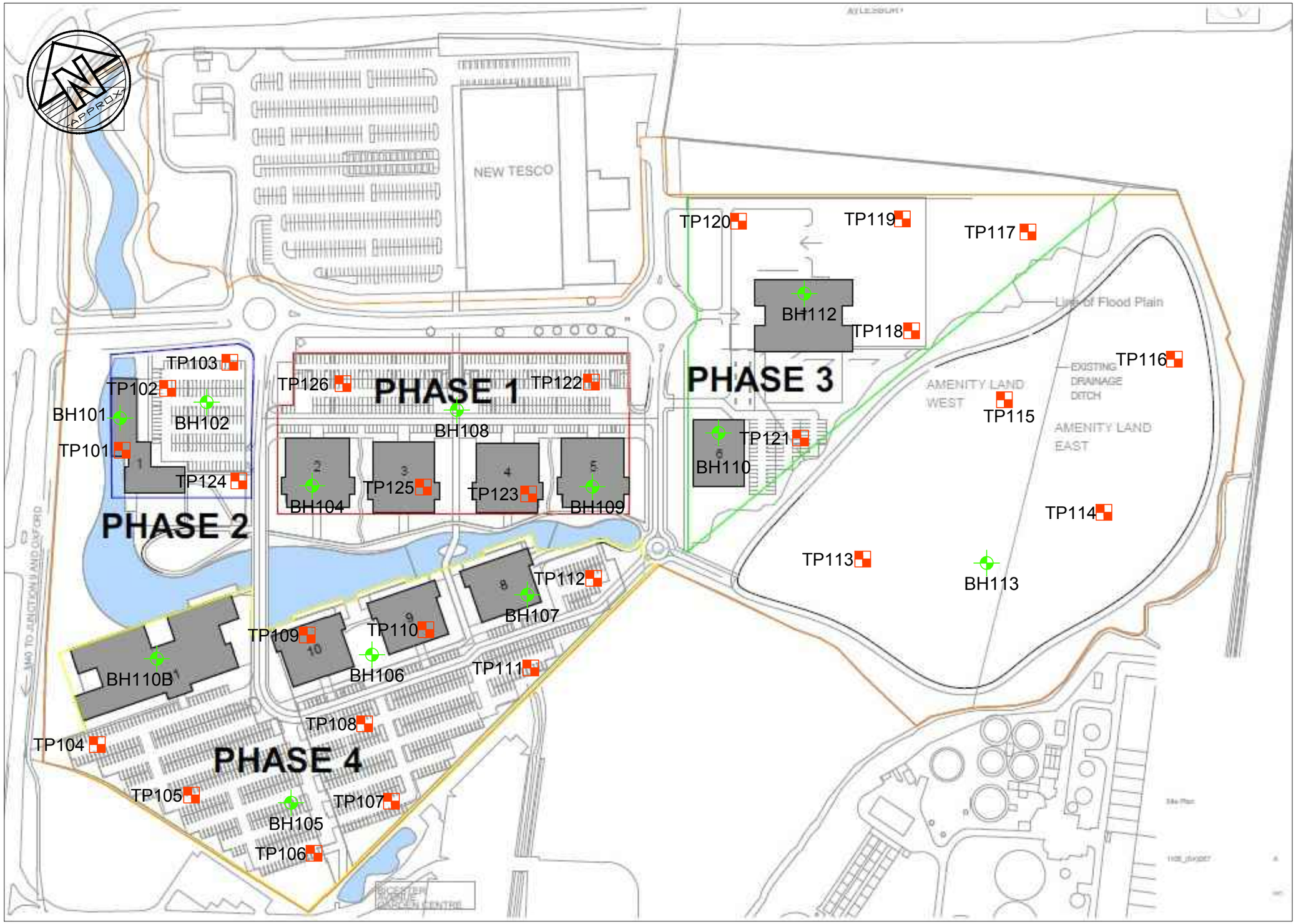
Drawing Status:

FINAL

Drawing No:	Revision:
LDB-BWB-00-XX-EN-DR-0001	F1

DRAWING 2

EXPLORATORY HOLE LOCATION PLAN



Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Key Plan

Legend

TP** Denotes Location of Trial Pit

BH** Denotes Location of Cable Percussive Borehole

Rev	Date	Details of issue / revision	Drw	Rev
P1	26.09.17	FINAL	PT	RPD

Issues & Revisions

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Client
SLADEN ESTATES LTD

Project Title
LAKEVIEW DRIVE, BICESTER

Drawing Title
EXPLORATORY HOLE LOCATION PLAN

Drawn:	P.TAYLOR	Reviewed:	R.PARKER-DUNN
BWB Ref:	NTE2366	Date: 26.09.17	Scale@A3: NTS

Drawing Status
FINAL

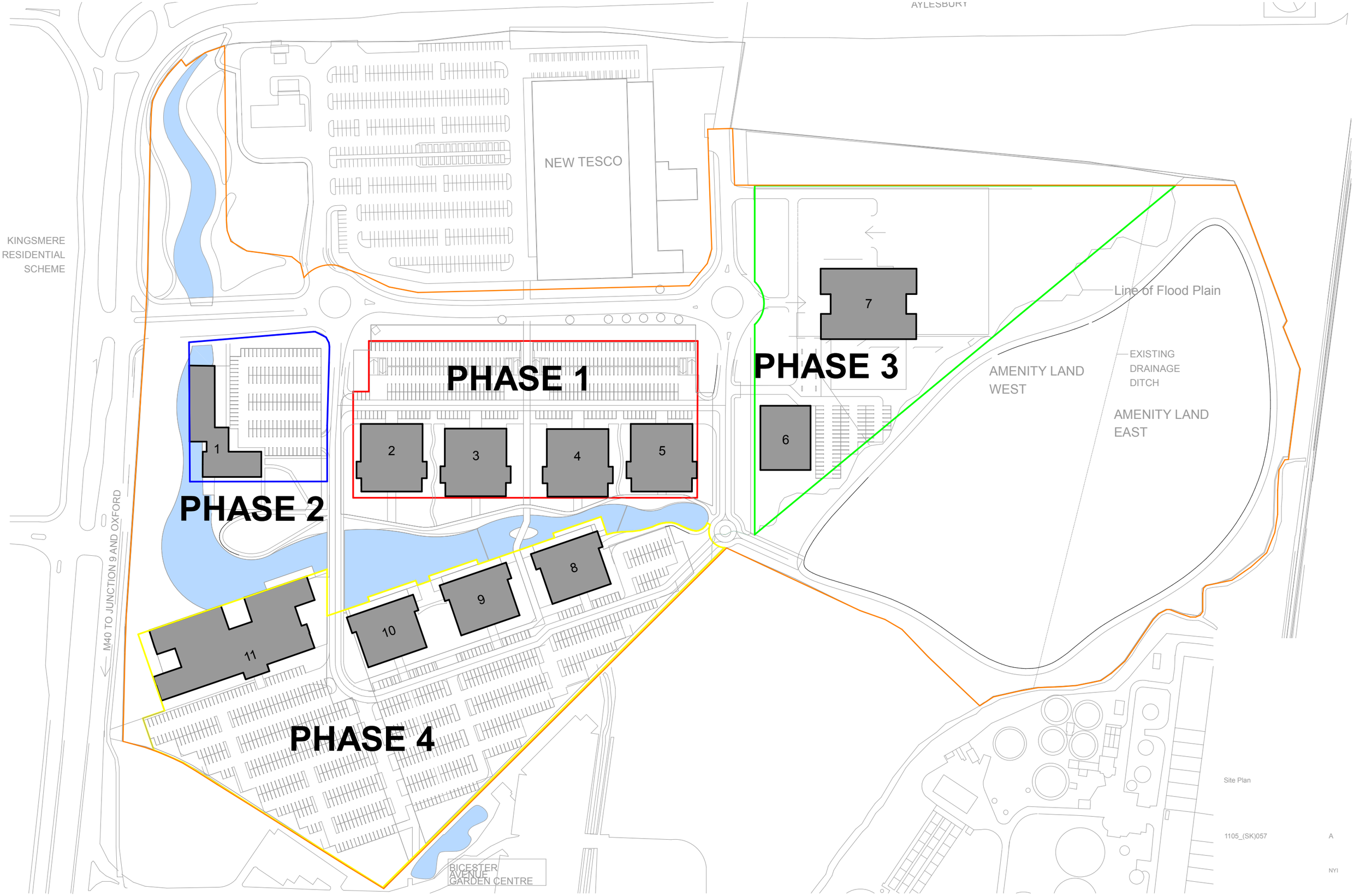
Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
LDB-BWB-ZZ-XX-DR-YE-0002_EHLP	S1	R1

Y:\NTE\NTE2366_Lakeveiw Drive, Bicester\02. Project Delivery\01. WIP\Drawings\LDB-BWB-ZZ-XX-DR-YE-0002_EHLP.dwg

APPENDICES

APPENDIX 1

PROPOSED DEVELOPMENT PLAN



Purpose of Issue	status	Scales @ A3	Project No.	Originator	Project	Client	Layout Title	Drawing Number
Information		**1:2000**	**16SK109**	SEL Design Architecture Planning Breeam	**Bicester Office Park**	SLADEN ESTATES	**Site Phasing Layout**	project: DW · originator: - · zone: - · level: - · type: - · role: A · number: **001** · rev: **A**

APPENDIX 2

EXPLORATORY HOLE LOGS

BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID					
BH101	**Project Name:** Lakeview Drive, Bicester			**Ground Level (m AOD):**	66.67
	Project Number: NTE2366			**Eastings:**	457690.08
	Client: Sladen Estates Ltd			**Northings:**	221711.42
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:**	14/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata				Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[1.00]	Firm brown, yellow and grey slightly sandy gravelly CLAY with low to moderate cobble content. Gravel is fine to coarse sub-angular to sub-rounded brick, concrete, asphalt, flint and quartzite with rare timber, ceramic and glass. Cobbles of sub-angular brick and concrete. (Made Ground)			B	0.00	1.00				
			65.67 [1.00]	Very dense light brown to yellowish brown occasionally grey slightly clayey sandy GRAVEL of fine to coarse sub-angular limestone. (Cornbrash Formation)		1.00	B D	1.00 1.00	1.40 2.00	S	1.00	50 (9,13/50 for 250mm)	1.00m (NR)
			64.67 [0.55]	Very dense dark grey slightly clayey sandy GRAVEL with low cobble content. Gravel is fine to coarse sub-angular limestone. Cobbles of sub-angular limestone. (Cornbrash Formation)		2.00	D U (100)	2.00 2.00	2.10 2.10				
			64.12	Hole Terminated at 2.55m bgl.		2.55	D	2.50	2.53	S	2.50	50 (25 for 15mm/50 for 10mm)	2.00m (NR)

Chiseling

From (m bgl)	To (m bgl)	Time (hh:mm)
2.10	2.50	00:30

Water Added

From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

No groundwater encountered.

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:
B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:
Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests
C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID				
BH102	**Project Name:** Lakeview Drive, Bicester		**Ground Level (m AOD):** 65.88	
	Project Number: NTE2366		**Eastings:** 457757.57	
	Client: Sladen Estates Ltd		**Northings:** 221669.84	
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:** 14/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata			Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.20]	Shrubs over firm dark brown slightly sandy slightly gravelly CLAY with frequent rootlets throughout. Gravel is fine and medium sub-angular limestone and occasional sandstone. Rare fragments of brick. (Made Ground)	0.20	B	0.10	0.70				
			65.68 [0.50]	Stiff greyish brown occasionally mottled yellow and orange slightly gravelly CLAY. Gravel is fine and medium sub-angular limestone. Occasional rootlets. (Alluvium)	0.70							
	1.00m bgl after 20mins		65.18 [2.10]	Light brown to yellowish brown mottled grey sandy GRAVEL with rare pockets of soft clay. Gravel us fine to coarse sub-angular limestone. (Cornbrash Formation)		D	1.00	1.45	S	1.00	N=29 (8,16/6,6,9,8)	1.00m (NR)
						D	2.00	2.12	S	2.00	50 (25 for 75mm/50 for 45mm)	2.00m (NR)
	2.5m bgl											
			63.08 [0.60]	Very dense dark grey weathered LIMESTONE arising as a slightly clayey slightly sandy gravel of fine and medium sub-angular mudstone and limestone. (Cornbrash Formation)	2.80	D	3.00	3.37	S	3.00	50 (5,15/50 for 215mm)	2.00m (1.00m bgl)
			62.48	Hole Terminated at 3.40m bgl.	3.40							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)
0.80	3.00	03:00

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

Groundwater encountered at 2.5m, rising to 1.0m after 20 minutes

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:
B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:
Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests
C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID				
BH103	**Project Name:** Lakeview Drive, Bicester		**Ground Level (m AOD):**	
	Project Number: NTE2366		**Eastings:**	457674.00
	Client: Sladen Estates Ltd		**Northings:**	221478.00
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:** 14/08/2017 - 15/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata			Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.60]	Grass over brown fine SAND with rootlets to 0.25m. (Topsoil)			B	0.00	1.20				
			[0.85]	Dense yellow and grey slightly clayey slightly sandy GRAVEL of fine to coarse sub-angular limestone, quartzite and flint. (River Terrace Deposits)		0.60	D	1.20	1.65	S	1.20	N=34 (1,4/6,6,10,12)	1.00m (NR)
			[0.45]	Dense light brown to yellowish brown slightly sandy GRAVEL of fine to coarse sub-angular limestone, flint and quartzite. (River Terrace Deposits)		1.45							
			[2.35]	Very dense grey to dark grey slightly sandy GRAVEL of fine to coarse angular to sub-angular mudstone. (Weathered Kellaways Clay Member)		1.90	B	1.90	2.20				
							B	2.20	2.50	S	2.20	50 (4,12/50 for 150mm)	2.00m (1.60m bgl)
							D	2.20	3.00				
							D	3.00	3.45	S	3.00	N=50 (5,5/10,10,10,20)	2.00m (1.60m bgl)
							B	3.45	4.00				
							D	4.00	4.12	S	4.00	50 (25 for 110mm/50 for 10mm)	2.00m (1.00m bgl)
				Hole Terminated at 4.25m bgl.		4.25							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)
2.00	4.00	03:00

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

No groundwater encountered.

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover. 3. Coordinates taken from a hand held GPS unit.

Legend

Sample Type:
B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:
Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests
C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID					
BH104	**Project Name:** Lakeview Drive, Bicester			**Ground Level (m AOD):**	66.52
	Project Number: NTE2366			**Eastings:**	457786.90
	Client: Sladen Estates Ltd			**Northings:**	221621.63
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:**	14/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata			Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.25]	Grass over brown fine SAND with rootlets throughout.									
			66.27 [1.75]	(Topsoil)		0.25	B	0.20	0.70				
				Firm brown slightly sandy CLAY. Gravel is fine and sub-angular to sub-rounded, limestone and flint. Occasional rootlet to 0.6m.									
				(Alluvium)			D	1.00	1.45	S	1.00	N=14 (5,9/6,4,2,2)	0.80m (NR)
				1.7m - 2.0m: Becomes orangish brown.			B	1.70	2.00				
			64.52 [0.40]	Stiff dark grey weather MUDSTONE arising's as a gravelly clay.		2.00	D	2.00	2.10	S	2.00	50 (25 for 55mm/50 for 35mm)	1.00m (NR)
				(Weathered Kellaways Formation)			D	2.10	2.13	S	2.10	50 (25 for 10mm/50 for 20mm)	1.00m (NR)
			64.12	Hole Terminated at 2.40m bgl.		2.40							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)
2.00	2.10	01:30

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

No groundwater encountered.

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:

B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:

Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests

C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID					
BH105	**Project Name:** Lakeview Drive, Bicester			**Ground Level (m AOD):**	64.82
	Project Number: NTE2366			**Eastings:**	457682.02
	Client: Sladen Estates Ltd			**Northings:**	221457.75
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:**	15/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata			Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.20] 64.62 [1.24]	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and occasional limestone. (Topsoil)		0.20	B	0.20	1.20				
				Light brown to yellow slightly sandy GRAVEL of fine to coarse angular to sub-angular limestone. (Cornbrash Formation)									
				1.2m - 1.4m: Moderate cobble content noted.			D	1.20	1.44	S	1.20	50 (4,14/50 for 85mm)	1.00m (NR)
			63.38	Hole Terminated at 1.44m bgl.		1.44							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)
1.20	1.40	01:00

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

No groundwater encountered.

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:
B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:
Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests
C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID				
BH106	**Project Name:** Lakeview Drive, Bicester		**Ground Level (m AOD):** 65.80	
	Project Number: NTE2366		**Eastings:** 457772.49	
	Client: Sladen Estates Ltd		**Northings:** 221499.77	
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:** 16/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata			Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.35]	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and occasional limestone. (Topsoil)			B	0.10	0.40				
			65.45 [0.85]	Firm brown and yellow slightly sandy slightly gravelly CLAY with occasional rootlets to 0.8m. Gravel is fine and medium sub-angular to sub-rounded limestone, flint and quartzite. (Alluvium)		0.35	B	0.50	1.00				
							D	1.00	1.45	S	1.00	N=5 (1,2/1,1,1,2)	1.00m (NR)
			64.60 [1.43]	Firm becoming Stiff from 1.7m slightly sandy gravelly CLAY. Gravel is fine and medium sub-angular mudstone. Occasional coarse sand lenses. (Weathered Kellaways Clay Member)		1.20	B	1.20	2.00				
	1.80m bgl after 20mins						D	2.00	2.45	S	2.00	N=12 (1,2/2,3,3,4)	2.00m (NR)
	2.5m bgl						D	2.55	2.63	S	2.55	50 (25 for 65mm/50 for 10mm)	2.00m (1.80m bgl)
			63.17	Hole Terminated at 2.63m bgl.		2.63							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)
2.55	2.60	01:00

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

Groundwater encountered at 2.5m, rising to 1.8m

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:
B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:
Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests
C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID					
BH107	**Project Name:** Lakeview Drive, Bicester			**Ground Level (m AOD):**	65.22
	Project Number: NTE2366			**Eastings:**	457867.57
	Client: Sladen Estates Ltd			**Northings:**	221503.18
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:**	16/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata				Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.35]	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and occasional limestone. (Topsoil)			B	0.10	0.60				
			64.87 [0.75]	Firm orange slightly sandy slightly gravelly CLAY. Gravel is fine and medium sub-angular to sub-rounded flint, quartzite and limestone. (Alluvium)		0.35	B	0.70	1.00				
							B	1.00	1.45	S	1.00	N=5 (2,1/1,1,1,2)	1.00m (NR)
			64.12 [1.20]	Firm grey mottled orange slightly gravelly CLAY with occasional sand lenses. Gravel is fine and medium sub-angular to sub-rounded flint and limestone. (Alluvium)		1.10	D	1.00	1.50				
							D	2.00	2.45	S	2.00	N=8 (2,1/2,2,2,2)	1.00m (NR)
			62.92 [0.65]	Stiff dark grey gravelly CLAY. Gravel is fine and medium sub-angular mudstone. Rare shell fragments. (Weathered Kellaways Clay Member)		2.30	B	2.30	2.70				
			62.27 [0.45]	Very stiff dark grey weather MUDSTONE arising's as a gravelly clay. (Kellaways Clay Member)		2.95	D	3.00	3.02	S	3.00	50 (25 for 15mm/50 for 5mm)	1.00m (NR)
							D	3.30	3.31	S	3.30	50 (25 for 5mm/50 for 5mm)	1.00m (NR)
			61.82	Hole Terminated at 3.40m bgl.		3.40							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)
3.20	3.40	01:00

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Remarks:
No groundwater encountered.

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:
B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:
Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests
C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

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LOCATION ID					
BH108	**Project Name:** Lakeview Drive, Bicester			**Ground Level (m AOD):**	67.15
	Project Number: NTE2366			**Eastings:**	457853.66
	Client: Sladen Estates Ltd			**Northings:**	221611.33
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:**	15/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata			Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.40]	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and occasional limestone. (Topsoil)			B	0.10	0.40				
			66.75 [2.10]	Firm grey to greyish brown slightly gravelly CLAY with occasional rootlets to 0.65m. Gravel is fine and medium sub-angular to sub-rounded sandstone and occasional quartzite. Rare shell fragments. (Alluvium)		0.40	B	0.40	1.00				
							D	1.00	1.45	S	1.00	N=7 (1,1/1,2,2,2)	1.00m (NR)
							D	2.00	2.45	S	2.00	N=11 (1,2/2,2,3,4)	2.00m (NR)
			64.65 [0.50]	Stiff dark grey CLAY with occasional lenses of fine sand. Occasional fine shell fragments. (Weathered Kellaways Clay Member)		2.50	B	2.50	3.00				
			64.15 [0.25]	Dark grey MUDSTONE arising as a slightly clayey gravel of fine to coarse sub-angular mudstone. (Kellaways Clay Member)		3.00				S	3.00	50 (25 for 0mm/50 for 10mm)	2.00m (NR)
			63.90	Hole Terminated at 3.25m bgl.		3.25				S	3.20	50 (25 for 0mm/50 for 5mm)	2.00m (NR)

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)
3.00	3.20	01:00

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

No groundwater encountered.

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:
B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:
Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests
C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID					
BH109	**Project Name:** Lakeview Drive, Bicester			**Ground Level (m AOD):**	65.89
	Project Number: NTE2366			**Eastings:**	457930.93
	Client: Sladen Estates Ltd			**Northings:**	221541.14
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:**	17/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata				Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.35]	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and occasional limestone. (Topsoil)			B	0.10	0.60				
			65.54 [2.25]	Firm light and brown slightly sandy slightly gravelly CLAY with occasional rootlets to 0.75m. Gravel is fine and medium sub-angular to sub-rounded flint, quartzite and limestone. Occasional shell fragments. (Alluvium)		0.35	B	0.70	1.00				
							D	1.00	1.45	S	1.00	N=6 (1,1/1,1,2,2)	1.00m (NR)
							D	2.00	2.45	S	2.00	N=11 (1,2/2,2,3,4)	1.00m (NR)
			63.29 [0.45]	Stiff dark grey gravelly CLAY. Gravel is fine and sub-angular mudstone. Occasional shell fragments. (Weathered Kellaways Clay Member)		2.60							
			62.84 [0.30]	Very dense dark grey weathered LIMESTONE arising as a slightly sandy gravel of fine subangular limestone. (Cornbrash Formation)		3.05	D	3.00	3.01	S	3.00	50 (25 for 5mm/50 for 0mm)	1.00m (NR)
			62.54	Hole Terminated at 3.30m bgl.		3.35				S	3.30	50 (25 for 0mm/50 for 0mm)	1.00m (NR)

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)
3.10	3.30	01:00

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

No groundwater encountered.

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:

B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:

Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests

C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID				
BH110	**Project Name:** Lakeview Drive, Bicester		**Ground Level (m AOD):** 65.65	
	Project Number: NTE2366		**Eastings:** 458002.12	
	Client: Sladen Estates Ltd		**Northings:** 221539.73	
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:** 17/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata				Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.35]	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and occasional limestone. (Topsoil)			B	0.10	0.40				
			65.30 [1.85]	Firm light brown slightly sandy CLAY with rare fine and medium sub-angular to sub-rounded quartzite and sandstone gravels. Rare relic rootlets to 0.55m. (Alluvium)		0.35	B	0.40	0.90				
							D	1.00	1.45	S	1.00	N=7 (1,1/1,2,2,2)	1.00m (NR)
							D	2.00	2.45	S	2.00	N=14 (1,2/3,3,4,4)	2.00m (NR)
			63.45 [1.20]	Firm dark grey gravelly becoming very gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)		2.20	B	2.50	3.00				
				3.0m - 3.4m: Becomes stiff.			D	3.00	3.38	S	3.00	48 (2,3/48 for 230mm)	3.00m (NR)
			62.25 [0.10] 62.15	Very dense dark grey weathered LIMESTONE arising as a slightly sandy gravel of fine and medium subangular limestone. (Cornbrash Formation)		3.40 3.50				C	3.50	50 (25 for 5mm/50 for 0mm)	3.00m (NR)
				Hole Terminated at 3.55m bgl.									

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)
3.40	3.50	01:00

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

No groundwater encountered.

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:

B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:

Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests

C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID					
BH112	**Project Name:** Lakeview Drive, Bicester			**Ground Level (m AOD):**	65.97
	Project Number: NTE2366			**Eastings:**	458075.45
	Client: Sladen Estates Ltd			**Northings:**	221582.76
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:**	17/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata				Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.20]	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and occasional limestone. (Topsoil)			B	0.10	0.60				
			65.77 [1.80]			0.20							
				Firm orange slightly sandy slightly gravelly CLAY. Gravel is fine and medium sub-angular to sub-rounded flint, quartzite and limestone. (Alluvium)			B	0.60	1.00				
							D	1.00	1.45	S	1.00	N=6 (1,1/1,2,1,2)	1.00m (NR)
			63.97 [1.00]	Stiff dark grey gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)		2.00	B D	2.00 2.00	2.45 2.50	S	2.00	N=8 (1,1/1,2,2,3)	1.00m (NR)
			62.97 [0.14]	Very dense dark grey weathered LIMESTONE arising as a slightly sandy gravel of fine and medium subangular limestone. (Cornbrash Formation)		3.00	D	3.00	3.14	S	3.00	50 (37 for 140mm/50 for 0mm)	0.10m (NR)
			62.83			3.14				S	3.20	50 (25 for 5mm/50 for 0mm)	1.00m (NR)
				Hole Terminated at 3.14m bgl.									

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)
3.10	3.20	01:00

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

No groundwater encountered.

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:
B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:
Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests
C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID				
BH113	**Project Name:** Lakeview Drive, Bicester		**Ground Level (m AOD):** 64.63	
	Project Number: NTE2366		**Eastings:** 458087.80	
	Client: Sladen Estates Ltd		**Northings:** 221373.13	
Hole Type: CP	**Rig:** Dando 2500	**Start & End Date:** 15/08/2017	**Engineer:** LC	**Checker:** RPD

Groundwater			Strata				Samples			In-Situ Tests			
Strike	Strike Details	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
			[0.20]	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine light coarse angular light sub-rounded flint, quartzite and occasional limestone. (Topsoil)									
			64.43 [1.30]			0.20	B	0.20	1.20				
				Soft light brown mottled grey and occasionally orange slightly sandy slightly gravelly CLAY with occasional roots to 0.6m. Gravel is fine and medium sandstone and occasional shell fragments. Occasional sand lenses. (Alluvium)									
	1.00m bgl after 20mins						D	1.20	1.65	S	1.20	N=11 (1,2/3,3,3,2)	1.00m (NR)
	1.2m bgl		63.13 [0.40]	Light brown and orange gravelly fine to coarse SAND. Gravel is fine and medium sub-angular sandstone and quartzite. (River Terrace Deposits)		1.50	D	1.50	1.90				
			62.73 [2.40]	Firm dark grey CLAY with occasional lenses of fine sand. Rare fine shell fragments. (Weathered Kellaways Clay Member)		1.90	B	1.90	2.00				
							D	2.00	2.45	S	2.00	N=11 (1,2/3,3,3,2)	2.00m (NR)
							B	2.45	3.00				
							U (32)	3.00	3.45				
							D	3.45	3.55				
							D	3.80	4.15	S	3.80	N=7 (1,1/1,2,2,2)	3.00m (1.00m bgl)
							B	3.90	4.10				
			60.33 [0.10]	Very dense dark grey weathered LIMESTONE arisings as a slightly sandy gravel. (Cornbrash Formation)		4.30				S	4.30	50 (25 for 0mm/50 for 0mm)	3.00m (1.00m bgl)
			60.23	Hole Terminated at 4.40m bgl.		4.40							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Remarks:

Groundwater encountered at 1.2m, rising to 1.0m

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Installed with 50mm HDPE well screen, gas tap and flush cover.

Legend

Sample Type:
B - Bulk
C - Core
D - Disturbed
ES - Environmental Sample
U - Undisturbed

Groundwater:
Groundwater Strike
Resting Groundwater
NR = Not Recorded

In-Situ Tests
C - Cone Penetration Test
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detection Screen
S - Standard Penetration Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** Lakeview Drive, Bicester		2.20
TP101	**Project Number:** NTE2366		0.65 Pit Dimensions (m) 0 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 15/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 66.30		**Eastings & Northings:** 457678E 221686N	Engineer: LC / Checker: RPD

Groundwater		Strata					Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			66.30	0.35m	Grass over brown gravelly SAND with frequent rootlets. Gravel is fine to coarse angular to sub-angular limestone with rare inclusions of brick, plastic and timber. (Made Ground)	0.00	ES	0.20	0.30			
			65.95	0.35m	Brown occasionally yellowish brown slightly sandy gravelly COBBLE of angular limestone. Gravel is fine to coarse angular to sub-angular limestone. (Reworked Natural Ground)	0.35	ES	0.40	0.50			
			65.60	0.90m	Grey and yellow 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) *1.1m - 1.4m: Cobble content becomes moderate to high.*	0.70	B ES	0.80 0.80	0.90 1.00			
▼	1.3m bgl											
			64.70	0.50m	Firm dark grey mottled light brown slightly sandy gravelly CLAY. Gravel is fine and medium mudstone. (Weathered Kellaways Formation)	1.60	D ES	1.70 1.70	1.80 1.80			
			64.20	0.20m	Dark grey slightly sandy GRAVEL with low to moderate cobble content. Gravel is fine to coarse sub-angular mudstone. Cobbles of sub-angular mudstone. (Weathered Cornbrash Formation)	2.10	B	2.20	2.30			
			64.00		Hole Terminated at 2.30m bgl.	2.30						

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
Seepage noted from 1.3m

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:**	Lakeview Drive, Bicester	1.90
TP102	**Project Number:**	NTE2366	0.65 Pit Dimensions (m) 0 Degrees
	Client:	Sladen Estates Ltd	
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 15/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 66.34	**Eastings & Northings:** 457715E 221705N		Engineer: LC Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			66.04	0.30m	Brown gravelly fine and medium SAND. Gravel is fine to coarse angular to well rounded brick, concrete and flint with rare inclusion of ceramic and timber. (Made Ground)		0.30	ES	0.10	0.20			
			65.74	0.30m	Firm brown to dark brown slightly sandy gravelly CLAY. Gravel is fine and medium sub-angular to sub-rounded flint, quartzite and limestone. Occasional shell fragments. (Alluvium)		0.60	ES	0.40	0.50			
			65.34	0.40m	Brown occasionally mottled grey clayey GRAVEL of fine to coarse to sub-angular to sub-rounded limestone, flint and quartzite. (Alluvium)		1.00	ES	0.70	0.80			
▼	1.7m bgl 1.70m bgl after 20mins			0.95m	Yellow occasionally yellowish brown slightly sandy GRAVEL with low cobble content. Gravel is fine to coarse angular to sub-angular limestone. Cobbles of sub-angular limestone. (Weathered Cornbrash Formation)								
			64.39	0.40m	Soft light brown mottled grey slightly sandy very gravelly CLAY. Gravel is fine to coarse sub-angular mudstone. (Weathered Kellaways Formation)		1.95	D	1.95	2.20			
			63.99	0.30m	Grey to dark grey slightly sandy GRAVEL with low cobble content. Gravel is fine to coarse angular to sub-angular mudstone. Cobbles of sub-angular mudstone. (Weathered Kellaways Formation)		2.35						
			63.69		Hole Terminated at 2.65m bgl.		2.65						

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Notes:

Groundwater encountered at 1.7m

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: **TP103**	**Project Name:** Lakeview Drive, Bicester		2.10
	Project Number: NTE2366		0.65 Pit Dimensions (m) 270 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 15/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 66.22		**Eastings & Northings:** 457766E 221691N	Engineer: LC / Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			65.42	0.80m	Shrubs over brown slightly clayey gravelly SAND. Gravel is 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			
			65.12	0.30m	Soft slightly gravelly CLAY with occasional rootlets. Gravel is fine and medium sub-angular to sub-rounded flint, limestone and quartzite. (Alluvium)		0.80	ES	0.90	1.00			
▼	1.7m bgl 1.70m bgl after 20mins			1.25m	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)		1.10						
			63.87		Hole Terminated at 2.35m bgl.		2.35						

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
Steady ingress noted from 1.7m

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:**	Lakeview Drive, Bicester	2.00	
TP104	**Project Number:**	NTE2366	0.65 Pit Dimensions (m)	90 Degrees
	Client:	Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 15/08/2017	Stability: Remain stable throughout	
Ground Level (m AOD): 65.63		**Eastings & Northings:** 457606E 221547N	Engineer: LC	Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			65.28	0.35m	Grass over slightly clayey slightly gravelly fine SAND with rootlets. Gravel is fine and medium sub-angular limestone and occasional quartzite. (Topsoil)		0.35	B	0.40	0.50			
								ES	0.40	1.00			
				1.40m	Brownish orange and yellow slightly sandy GRAVEL with high cobble content. Gravel is fine to coarse angular to sub-angular limestone. Cobbles of limestone. (Weathered Cornbrash Formation)			B	1.20	1.75			
▼	1.6m bgl 1.60m bgl after 20mins		63.88		Hole Terminated at 1.75m bgl.		1.75						

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Notes:

Slow ingress noted from 1.6m

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:**	Lakeview Drive, Bicester	2.00	
TP105	**Project Number:**	NTE2366	0.65 Pit Dimensions (m)	45 Degrees
	Client:	Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 15/08/2017	Stability: Remain stable throughout	
Ground Level (m AOD): 65.00		**Eastings & Northings:** 457642E 221476N	Engineer: LC	Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			64.60	0.40m	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)		0.40						
			64.30	0.30m	Soft brown to dark brown clayey Pseudo-fibrous PEAT with frequent rootlets and organic matter. (Alluvium)		0.70	D ES	0.50 0.50	0.60 0.60			
			63.80	0.50m	Yellow and grey sandy GRAVEL of fine to coarse angular to sub-angular limestone and shell fragments. Occasional relic roots and organic matter. (Alluvium)		1.20	ES	0.80	0.90			
▼	1.25m bgl 1.25m bgl after 20mins		63.00	0.80m	Yellowish grey slightly sandy GRAVEL with high cobble content. Gravel is fine to coarse angular to sub-angular limestone. Cobbles of sub-angular limestone. (Weathered Cornbrash Formation)		2.00						
					Hole Terminated at 2.00m bgl.								

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Notes:

Seepage noted from 1.25m

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP106	**Project Name:** Lakeview Drive, Bicester		2.20 / 0.60 Pit Dimensions (m) / 0 Degrees
	Project Number: NTE2366		
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 15/08/2017	Stability: Unstable from ground level to 1.4m
Ground Level (m AOD): 64.73		**Eastings & Northings:** 457666E 221424N	Engineer: LC / Checker: RPD

Groundwater		Strata					Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			64.38	0.35m	Grass over brown slightly clayey gravelly fine and medium SAND with frequent rootlets. Gravel is fine to coarse angular to sub-angular quartzite, flint and limestone. (Topsoil)	0.35	ES	0.10	0.20			
					Orangish yellow occasionally grey gravelly fine and medium SAND. Gravel is fine to coarse angular to sub-angular limestone with occasional flint and quartzite. (River Terrace Deposits)		ES	0.40	0.50			
				1.05m	*0.8m - 1.4m: Becomes more light grey.*							
▼	1.1m bgl 1.10m bgl after 20mins						ES	1.00	1.10			
			63.33			1.40						
				0.70m	Firm dark grey slightly gravelly CLAY. Gravel is fine sub-angular weak mudstone with rare shell fragments. (Weathered Kellaways Clay Member)		ES	1.50	1.60			
			62.63		Hole Terminated at 2.10m bgl.	2.10						

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
Steady ingress noted from 1.1m

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:**	Lakeview Drive, Bicester	2.20
TP107	**Project Number:**	NTE2366	0.75 Pit Dimensions (m) 45 Degrees
	Client:	Sladen Estates Ltd	
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Very unstable from 0.8m
Ground Level (m AOD): 64.74		**Eastings & Northings:** 457737E 221431N	Engineer: LC / Checker: RPD

Groundwater		Strata					Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			64.44	0.30m	Grass over greyish brown slightly gravelly fine SAND. Gravel is fine to coarse sub-angular with occasional shells. (Topsoil)	0.30	ES	0.10	0.20			
				0.50m	Brown to orangish brown slightly clayey gravelly fine and medium SAND. Gravel is fine to coarse sub-angular limestone. Occasional rootlets to 0.7m. (Alluvium)		ES	0.50	0.60			
			63.94			0.80	B	0.80	1.10			
▼	1.1m bgl 1.10m bgl after 20mins			1.55m	Grey sandy gravelly SAND of fine to coarse angular to rounded mixed lithology's. (River Terrace Deposits) *1.1m - 2.35m: Becomes organish brown.*		B	1.20	1.50			
			62.39	0.05m		2.35						
			62.34		Dark grey extremely strong LIMESTONE (no returns). (Cornbrash Formation)	2.40						
					Hole Terminated at 2.40m bgl.							

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
Steady inflow recorded from 1.1m

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:**	Lakeview Drive, Bicester	2.00
TP108	**Project Number:**	NTE2366	0.60 Pit Dimensions (m) 45 Degrees
	Client:	Sladen Estates Ltd	
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 65.49	**Eastings & Northings:** 457751E 221471N		Engineer: LC Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			65.19	0.30m	Grass over greyish brown slightly gravelly fine SAND. Gravel is fine to coarse sub-angular with occasional shells. (Topsoil)		0.30	D	0.30	0.40			
			64.79	0.40m	Firm orangish brown slightly sandy CLAY. Gravel is fine and sub-angular to sub-rounded, limestone and flint. Occasional rootlet to 0.6m. (Alluvium)		0.70	D	0.80	0.90			
			64.39	0.40m	Stiff grey slightly gravelly CLAY with occasional pockets of coarse sand lenses. Gravel is fine sub-angular limestone and occasional quartzite. (Alluvium)		1.10						
			64.04	0.35m	Orange slightly gravelly fine to coarse SAND. Gravel is fine and coarse angular to sub-angular limestone and flint. (Alluvium)		1.45	D	1.50	1.60			
▼	2.5m bgl 2.50m bgl after 20mins		63.04	1.00m	Stiff grey with occasional brown speckling gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)		2.45						
			62.99	0.05m	Dark grey weathered LIMESTONE arising as slightly sandy gravel with low to moderate cobble content. Occasional shell fragments noted. (Cornbrash Formation)		2.50						
					Hole Terminated at 2.50m bgl.								

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Notes:

Slight seepage noted from 2.5m

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:**	Lakeview Drive, Bicester	2.00
TP109	**Project Number:**	NTE2366	0.65 Pit Dimensions (m) 225 Degrees
	Client:	Sladen Estates Ltd	
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Unstable between ground level and 1.0m
Ground Level (m AOD): 66.25	**Eastings & Northings:** 457753E 221535N		Engineer: LC Checker: RPD

Groundwater		Strata					Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			65.90	0.35m	Grass over greyish brown slightly gravelly fine SAND. Gravel is fine to coarse sub-angular with occasional shells. (Topsoil)	0.35	B ES	0.40 0.40	0.50 0.90			
			65.25	0.65m	Orange sandy GRAVEL of fine to coarse angular to sub-angular limestone. (Alluvium)	1.00	D	1.10	1.20			
			64.50	0.75m	Firm grey mottled brown CLAY with occasional shell fragments. (Weathered Kellaways Clay Member)	1.75	D	1.80	1.90			
			63.85 63.80	0.65m 0.05m	Dark grey slightly sandy gravelly CLAY. Gravel is fine and medium sub-angular mudstone. Occasional coarse sand lenses. (Weathered Kellaways Clay Member)	2.40 2.45						
					Dark grey weathered LIMESTONE arising as slightly sandy gravel with low to moderate cobble content. Occasional fine shell fragments noted. (Cornbrash Formation)							
					Hole Terminated at 2.45m bgl.							

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
No groundwater encountered

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP110	**Project Name:** Lakeview Drive, Bicester		2.00 / 0.65 Pit Dimensions (m) / 45 Degrees
	Project Number: NTE2366		
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 65.39		**Eastings & Northings:** 457808E 221487N	Engineer: LC / Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			65.04	0.35m	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine light coarse angular light sub-rounded flint, quartzite and occasional limestone. (Topsoil)		0.35						
				0.50m	Brownish orange slightly gravelly fine SAND. Gravel is fine and medium sub-angular to sub-rounded flint, quartzite and limestone. (Alluvium)			B	0.40	0.70			
			64.54	1.35m	Stiff grey occasionally speckled brown very slightly gravelly CLAY. Gravel is fine and medium sub-angular limestone. (Alluvium)		0.85	D	1.00	1.10			
▼	2.15m bgl 2.15m bgl after 20mins		63.19	0.65m	Firm dark grey gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)		2.20	D	2.30	2.40			
					2.75m - 2.85m: Fine shell fragments and selenite crystals noted.								
			62.54	0.05m	Dark grey weathered LIMESTONE arising as slightly sandy gravel with low to moderate cobble content. (Cornbrash Formation)		2.85						
			62.49		Hole Terminated at 2.90m bgl.		2.90						

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
Slow ingress noted from 2.15m

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:**	Lakeview Drive, Bicester	2.10
TP111	**Project Number:**	NTE2366	0.65 Pit Dimensions (m) 315 Degrees
	Client:	Sladen Estates Ltd	
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Slightly unstable between 1.2m and 1.65m
Ground Level (m AOD): 64.60	**Eastings & Northings:** 457817E 221449N		Engineer: LC Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			64.35	0.25m	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and occasional limestone. (Topsoil)		0.25						
			63.85	0.50m	Brownish orange slightly gravelly clayey fine and medium SAND. Gravel is fine and medium angular to sub-rounded limestone, quartzite, flint with occasional shell fragments. (Alluvium)		0.75	ES	0.40	0.50			
			63.60	0.25m	Soft grey and orange slightly gravelly sandy CLAY. Gravel is fine and medium angular to sub-rounded limestone, quartzite numerous flint with occasional shell fragments. (Alluvium)		1.00						
▼	1.2m bgl 1.20m bgl after 20mins		62.95	0.65m	Orange occasionally grey SAND and GRAVEL. Gravel is fine and medium angular to sub-rounded quartzite, limestone and flint. Sand is fine and medium. (River Terrace Deposits)		1.65	ES	1.10	1.20			
			62.40	0.55m	Firm dark grey slightly gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)		2.20	D	1.80	1.90			
			62.35	0.05m	Dark grey weathered LIMESTONE arising as slightly sandy gravel with low to moderate cobble content. (Cornbrash Formation)		2.25						
					Hole Terminated at 2.25m bgl.								

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Notes:

Steady inflow noted from 1.2m

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:**	Lakeview Drive, Bicester	2.10
TP112	**Project Number:**	NTE2366	0.60 Pit Dimensions (m) 0 Degrees
	Client:	Sladen Estates Ltd	
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Unstable between 1.05m and 1.45m
Ground Level (m AOD): 64.68	**Eastings & Northings:** 457905E 221483N		Engineer: LC Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			64.43	0.25m	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and occasional limestone. (Topsoil)		0.25						
				0.80m	Firm orange occasionally brownish orange slightly gravelly sandy CLAY with occasional rootlets. Gravel is fine and medium sub-angular to sub-rounded flint and limestone. Occasional pockets of fine and medium sand. (Alluvium)			ES	0.40	0.50			
▼	1.15m bgl 1.15m bgl after 20mins		63.63	0.40m	Yellowish brown to greyish brown SAND and GRAVEL. Gravel is fine to coarse sub-angular to sub-rounded quartzite. Sand is fine and medium. (River Terrace Deposits)		1.05						
			63.23	1.00m	Stiff dark grey gravelly becoming very gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)		1.45	ES	1.50	1.60			
			62.23		Extremely strong dark grey LIMESTONE (no returns). (Cornbrash Formation)		2.45						
			62.23		Hole Terminated at 2.50m bgl.		2.45						

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Notes:

Slow ingress noted from 1.15m

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
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PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP113	**Project Name:** Lakeview Drive, Bicester		2.10 / 0.80 Pit Dimensions (m) / 180 Degrees
	Project Number: NTE2366		
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Unstable between 1.1m and 1.7m
Ground Level (m AOD): 64.51		**Eastings & Northings:** 458046E 221396N	Engineer: LC / Checker: RPD

Groundwater		Strata					Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			64.26	0.25m	Grass over slightly clayey slightly gravelly fine SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and occasional limestone. (Topsoil)	0.25						
				1.00m	Firm light grey occasionally brown slightly sandy slightly gravelly CLAY with occasional rootlets. Gravel is fine sub-angular quartzite and limestone. Frequent shell fragments. (Alluvium)							
					0.75m - 1.25m: Becomes soft, brown mottled grey.							
▼	1.1m bgl											
	1.10m bgl after 20mins		63.26	0.45m	Orange occasionally light grey SAND and GRAVEL. Gravel is fine to coarse sub-angular limestone, quartzite and flint. Sand is fine and medium. (River Terrace Deposits)	1.25						
▼	1.5m bgl		62.81	0.80m	Firm dark grey slightly gravelly CLAY. Gravel is fine angular to sub-angular and shell fragments. (Weathered Kellaways Clay Member)	1.70						
	1.50m bgl after 20mins				*2.3m - 2.5m: Becomes stiff.*							
			62.01	1.25m	Stiff dark grey very gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)	2.50						
			60.76	0.05m	Dark grey weathered LIMESTONE arising as slightly sandy gravel with low to moderate cobble content. (Cornbrash Formation)	3.75						
			60.71		Hole Terminated at 3.80m bgl.	3.80						

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Notes:

Seepage noted from 1.1, steady ingress from 1.5m

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion. 3. Trial pit excavated to assess ground conditions only.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP114	**Project Name:** Lakeview Drive, Bicester		2.20
	Project Number: NTE2366		0.75 Pit Dimensions (m) 270 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 15/08/2017	Stability: Unstable between ground level and 1.65m
Ground Level (m AOD): 64.62		**Eastings & Northings:** 458106E 221405N	Engineer: LC / Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			64.32	0.30m	Grass over greyish brown slightly gravelly fine SAND. Gravel is fine to coarse sub-angular quartzite with occasional shells. (Topsoil)		0.30	ES	0.10	0.20			
				0.70m	Firm brown mottled and orange slightly sandy slightly gravelly CLAY. Gravel is fine and medium sub-angular to sub-rounded flint and quartzite with occasional shell fragments. (Alluvium)			ES	0.40	0.50			
					0.6m - 0.7m: Band of fine and medium greyish brown sand.			D	0.80	0.90			
					0.6m - 0.85m: Becomes greyish brown.								
			63.62	0.65m	Light brown to orangish yellow SAND and GRAVEL. Sand is fine and medium. Gravel is fine to coarse sub-angular to sub-rounded mixed lithology's. (River Terrace Deposits)		1.00	ES	1.00	1.20			
▼	1.35m bgl 1.35m bgl after 20mins							B	1.10	1.50			
			62.97	0.30m	Soft dark grey slightly sandy slightly gravelly CLAY. Gravel is fine and medium sub-angular weak mudstone. Becomes more gravelly with depth. (Weathered Kellaways Clay Member)		1.65						
			62.67	1.60m	Stiff dark grey CLAY. (Weathered Kellaways Clay Member)		1.95	D	2.00	2.10			
								B	3.00	3.50			
			61.07		Hole Terminated at 3.55m bgl.		3.55						

Remarks

Reason for Termination:
Sufficient depth reached

Groundwater Notes:
Groundwater encountered at 1.35m

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP115	**Project Name:** Lakeview Drive, Bicester		2.10
	Project Number: NTE2366		0.60 Pit Dimensions (m) 180 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 17/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 64.64		**Eastings & Northings:** 458088E 221485N	Engineer: LC / Checker: RPD

Groundwater		Strata					Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	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)	0.30						
			64.14	0.20m	Firm grey becoming brown mottled grey from 0.4m slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular to sub-rounded limestone and quartzite. Occasional roots. Rare shell fragments. (Alluvium)	0.50						
			63.89	0.25m	Orange SAND and GRAVEL. Gravel is fine to coarse sub-angular limestone. Sand is fine and medium. (River Terrace Deposits)	0.75						
				1.60m	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)							
			62.29	0.55m	Stiff dark grey gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)	2.35						
▼	3m bgl 3.00m bgl after 20mins		61.74	0.10m	Dark grey weathered LIMESTONE arising as slightly sandy gravel with low to moderate cobble content. (Cornbrash Formation)	2.90						
			61.64		Hole Terminated at 3.00m bgl.	3.00						

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Notes:

Seepage noted from 3.0m

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion. 3. Trial pit excavated to assess ground conditions only.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP116	**Project Name:** Lakeview Drive, Bicester		2.30
	Project Number: NTE2366		0.60 Pit Dimensions (m) 270 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 15/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 64.63		**Eastings & Northings:** 458142E 221462N	Engineer: LC / Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			64.38	0.25m	Grass over brown slightly clayey fine SAND with frequent rootlets throughout. (Topsoil)		0.25						
				0.55m	Firm light brown speckled yellow and orange slightly sandy CLAY. Occasional shell fragments. (Alluvium) *0.45m - 0.8m: Becomes light grey and light brown.*		0.80						
			63.83	0.20m	Orange gravelly fine and medium SAND. Gravel is fine and medium sub-angular weak sandstone and quartzite. (River Terrace Deposits)		1.00						
			63.63	0.50m	Soft light grey occasionally mottled orangish brown CLAY with occasional shell fragments. (Alluvium)			D	1.10	1.20			
			63.13	1.30m	Firm dark grey CLAY with frequent relic roots and organic matter. (Alluvium)		1.50	D	1.60	1.70			
			61.83	0.50m	Stiff dark grey very gravelly CLAY. Gravel is fine to coarse mudstone. (Weathered Kellaways Clay Member)		2.80						
			61.33		Hole Terminated at 3.30m bgl.		3.30						

Remarks

Reason for Termination:
Sufficient depth reached

Groundwater Notes:
No groundwater encountered

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
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PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** Lakeview Drive, Bicester		1.90
TP117	**Project Number:** NTE2366		0.65 Pit Dimensions (m) 0 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 17/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 65.09		**Eastings & Northings:** 458196E 221571N	Engineer: LC / Checker: RPD

Groundwater		Strata					Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			64.84	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)	0.25						
			64.49	0.35m	Soft brownish orange slightly gravelly very sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded, limestone and quartzite. (Alluvium)	0.60	ES	0.40	0.50			
			63.94	0.55m	Brownish orange SAND and GRAVEL. Gravel is fine to coarse sub-angular limestone. Sand is fine and medium. (River Terrace Deposits)	1.15	B ES	0.70 0.70	0.80 1.00			
			63.24	0.70m	Stiff dark grey mottled brown slightly gravelly CLAY with occasional relic roots and organic matter. Gravel is fine sub-angular limestone and mudstone. (Weathered Kellaways Clay Member)	1.85						
			62.69	0.55m	Stiff dark grey gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)	2.40						
▼	2.5m bgl 2.50m bgl after 20mins		62.54	0.15m	Dark grey weathered LIMESTONE arising as slightly sandy gravel with low to moderate cobble content. (Cornbrash Formation)	2.55						
					Hole Terminated at 2.55m bgl.							

Remarks

Reason for Termination:
Sufficient depth reached

Groundwater Notes:
Groundwater encountered at 2.5m

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
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PID - Photo Ionisation Detector Test

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Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** Lakeview Drive, Bicester		2.10
TP118	**Project Number:** NTE2366		0.60 Pit Dimensions (m) 0 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 17/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 65.42		**Eastings & Northings:** 458105E 221556N	Engineer: LC / Checker: RPD

Groundwater		Strata					Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			65.17	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)	0.25						
			64.92	0.25m	Firm brownish orange slightly CLAY with occasional rootlets. Gravel is fine to coarse, quartzite and flint. (Alluvium)	0.50	ES	0.40	0.50			
			64.82	0.10m	Orange slightly clayey fine and medium SAND. (Alluvium)	0.60	ES	0.70	0.80			
							D	0.80	0.90			
				1.60m	Stiff light grey occasionally mottled brown slightly gravelly CLAY with rare rootlets to 0.9m. Occasional pockets of fine to coarse sandy gravel. (Alluvium)							
					1.4m - 1.8m: Becomes firm.		D	1.40	1.50			
					1.8m - 2.2m: becomes stiff and dark grey occasionally mottled brown.		D	1.90	2.00			
			63.22	0.65m	Dark grey clayey GRAVEL of fine to coarse sub-angular mudstone. (Weathered Kellaways Clay Member)	2.20	B	2.30	2.80			
▼	2.85m bgl after 20mins 2.95m bgl		62.57	0.15m	Extremely strong dark grey weathered LIMESTONE arising as a slightly sandy gravel with low cobble content. (Cornbrash Formation)	2.85	B	2.85	3.00			
			62.42		Hole Terminated at 3.00m bgl.	3.00						

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
Groundwater encountered at 2.95m, rising to 2.85m after 20 minutes

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP119	**Project Name:** Lakeview Drive, Bicester		2.00
	Project Number: NTE2366		0.60 Pit Dimensions (m) 180 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 17/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 66.11		**Eastings & Northings:** 458141E 221618N	Engineer: LC / Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			65.86	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)		0.25	ES	0.30	0.40			
			65.36	0.50m	Firm orangish brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse angular to sub-rounded flint and limestone. (Alluvium)		0.75	ES	0.80	0.90			
					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)			D	0.90	1.00			
					1.1m - 2.4m: Becomes firm.								
				1.65m				D	1.80	1.90			
			63.71		Stiff dark grey very gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)		2.40	D	2.50	2.60			
				1.55m									
			62.16	0.05m			3.95						
			62.11		Extremely strong dark grey weathered LIMESTONE arising as a slightly sandy gravel with low to moderate cobble content. (Cornbrash Formation)		4.00						
					Hole Terminated at 4.00m bgl.								

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
No groundwater encountered

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP120	**Project Name:** Lakeview Drive, Bicester		2.00
	Project Number: NTE2366		0.60 Pit Dimensions (m) 180 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 17/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 66.45		**Eastings & Northings:** 458070E 221668N	Engineer: LC / Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			66.15	0.30m	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)		0.30						
				0.90m	Orange slightly clayey gravelly fine and medium SAND. Gravel is fine to coarse angular to sub-rounded flint, quartzite and limestone. (River Terrace Deposits)			ES	0.60	0.70			
			65.25	0.70m	Firm dark grey gravelly CLAY with occasional relic rootlets. fine and sub-angular mudstone with occasional quartzite and flint. (Weathered Kellaways Clay Member)		1.20						
			64.55	1.05m	Stiff dark grey very gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)		1.90	B	2.00	2.30			
▼	3m bgl 3.00m bgl after 20mins		63.50	0.05m	Extremely strong dark grey weathered LIMESTONE arising as a slightly sandy gravel with low cobble content. (Cornbrash Formation)		2.95						
			63.45		Hole Terminated at 3.00m bgl.		3.00						

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
Seepage noted from 3.0m

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP121	**Project Name:** Lakeview Drive, Bicester		2.10
	Project Number: NTE2366		0.60 Pit Dimensions (m) 0 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 15/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 65.25		**Eastings & Northings:** 458039E 221518N	Engineer: LC / Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			64.95	0.30m	Grass over brown slightly clayey gravelly fine and medium SAND with frequent rootlets. Gravel is fine to coarse angular quartzite, flint and limestone. (Topsoil)		0.30	ES	0.10	0.20			
			64.60	0.35m	Firm orange slightly sandy slightly gravelly CLAY with occasional rootlets. Gravel is fine and medium sub-angular to sub-rounded quartzite and limestone. (Alluvium)		0.65	ES	0.40	0.50			
			64.25	0.35m	Firm brownish grey slightly gravelly CLAY with occasional pockets of medium and coarse sand. Occasional shells. Gravel is fine and medium sub-angular mudstone. (Alluvium)		1.00	D	0.80	0.90			
			64.00	0.25m	Orange slightly clayey gravelly fine and medium SAND. Fine to coarse angular to sub-rounded flint, quartzite and limestone. (River Terrace Deposits)		1.25						
				1.95m	Stiff grey to dark grey slightly gravelly CLAY with occasional pockets of medium and coarse sand. Occasional shell fragments. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member) *1.9m - 3.2m: Becomes very gravelly.*			D	2.00	2.10			
▼	3.3m bgl 3.30m bgl after 20mins		62.05	0.20m	Extremely strong dark grey weathered LIMESTONE arising as a slightly sandy gravel with low cobble content. (Cornbrash Formation)		3.20	B	3.20	3.35			
			61.85		Hole Terminated at 3.40m bgl.		3.40						

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
Slow ingress of water noted from 3.3m

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:**	Lakeview Drive, Bicester	2.20
TP122	**Project Number:**	NTE2366	0.65 Pit Dimensions (m) 180 Degrees
	Client:	Sladen Estates Ltd	
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 66.46	**Eastings & Northings:** 457939E 221581N		Engineer: LC Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			66.16	0.30m	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)		0.30						
					Stiff mottled brown CLAY with occasional relic rootlets. (Alluvium)			ES	0.50	0.60			
					0.75m - 1.45m: Lenses of medium coarse white sand appear.								
			65.01	1.15m	Firm grey occasionally orangish brown slightly sandy very gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)		1.45	ES	1.50	1.60			
					2.1m - 3.55m: Becomes stiff.			D	2.20	2.30			
			63.61	1.40m	Dark grey weathered MUDSTONE arising as a very clayey gravel of fine and medium mudstone. (Kellaways Clay Member)		2.85	B	2.90	3.40			
			62.91	0.70m	Dark grey weathered LIMESTONE arising as slightly sandy slightly gravelly COBBLE of limestone. (Cornbrash Formation)		3.55	B	3.55	3.70			
			62.76	0.15m	Hole Terminated at 3.70m bgl.		3.70						

Remarks

Reason for Termination:

Terminated in hard ground

Groundwater Notes:

No groundwater encountered

Other Remarks:

1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

BWB Consulting Ltd
Waterfront House
Station Street
Nottingham
NG2 3DQ

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E: nottingham@bwbconsulting.com
P: 0115 9241100

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP123	**Project Name:** Lakeview Drive, Bicester		2.20 / 0.65 / Pit Dimensions (m) / 45 Degrees
	Project Number: NTE2366		
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 66.82		**Eastings & Northings:** 457860E 221580N	Engineer: LC / Checker: RPD

Groundwater		Strata							Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)		Type	From (m)	To (m)	Type	Depth (m)	Result
			66.57	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)		0.25							
				0.85m	Firm brown becoming greyish brown from 0.7m slightly gravelly CLAY. Gravel is fine to coarse angular to sub-rounded quartzite and limestone. occasional rootlets to 0.5m. (Alluvium)				ES	0.50	0.60			
					0.75m - 1.1m: Becomes stiff with fine shell fragments noted.				D	1.00	1.10			
			65.72	0.50m	Stiff grey mottled brown and white sandy CLAY with medium and coarse sand lenses. (Alluvium)		1.10		ES	1.20	1.30			
			65.22	1.10m	Firm dark grey with brown and white weathering slightly sandy gravelly CLAY. Gravel is fine and medium mudstone. (Weathered Kellaways Clay Member)		1.60		D	1.70	1.80			
			64.12	0.70m	Dark grey weathered MUDSTONE arising as a stiff very gravelly clay. Gravels of fine and medium mudstone. (Kellaways Clay Member)		2.70		D	3.00	3.10			
			63.42 / 63.37	0.05m	Dark grey weathered LIMESTONE arising as slightly sandy slightly gravelly COBBLE of limestone. (Weathered Cornbrash Formation)		3.40 / 3.45							
					Hole Terminated at 3.45m bgl.									

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
No groundwater encountered

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: **TP124**	**Project Name:** Lakeview Drive, Bicester		2.20 / 0.65 Pit Dimensions (m) / 0 Degrees
	Project Number: NTE2366		
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 15/08/2017	Stability: Slightly unstable below 1.0m.
Ground Level (m AOD): 65.75		**Eastings & Northings:** 457746E 221645N	Engineer: LC / Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			65.50	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)		0.25	ES	0.10	0.20			
			65.10	0.40m	Dark brown clayey gravelly fine and medium SAND with frequent rootlets. Gravel is fine to coarse angular to quartzite, flint and limestone. (Made Ground)		0.65	B ES	0.70 0.70	0.80 1.00			
▼	1.1m bgl 1.10m bgl after 20mins		64.65	0.45m	Yellow and grey gravelly fine and medium SAND with medium cobble content. Gravel is fine to coarse angular to sub-angular limestone. Cobbles of angular to sub-angular limestone. (Weathered Cornbrash Formation)		1.10						
			63.90	0.75m	Yellowish grey slightly sandy slightly gravelly COBBLE of angular limestone. Gravel is fine to coarse angular to sub-angular limestone. (Cornbrash Formation)		1.85						
					Hole Terminated at 1.85m bgl.								

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
Seepage noted from 1.1m

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID: TP125	**Project Name:** Lakeview Drive, Bicester		2.00 / 0.65 Pit Dimensions (m) / 0 Degrees
	Project Number: NTE2366		
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 66.80		**Eastings & Northings:** 457817E 221604N	Engineer: LC / Checker: RPD

Groundwater		Strata						Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			66.55	0.25m	Grass over slightly clayey slightly gravelly fine SAND with rootlets. Gravel is fine and medium sub-angular limestone and occasional quartzite. (Topsoil)		0.25						
								ES	0.40	0.50			
				0.50m	Firm brown slightly gravelly sandy CLAY with occasional rootlets to 0.5m. Gravel is fine and medium occasional sub-angular to sub-rounded flint, quartzite, sandstone and limestone. (Alluvium)			D	0.50	0.60			
			66.05				0.75						
				0.20m				ES	0.80	0.90			
			65.85		Brown gravelly fine to coarse SAND. Gravel is fine to coarse sub-angular limestone. (Alluvium)		0.95	D	1.00	1.10			
				1.50m	Stiff grey occasionally speckled brown CLAY with occasional fine and medium sand partings. (Alluvium)								
					2.0m - 2.45m: Relic rootlets noted.			D	2.10	2.20			
			64.35	0.35m	Stiff dark grey gravelly CLAY becoming very gravelly from 2.6m. Gravel is fine and medium sub-angular mudstone. (Kellaways Clay Member)		2.45	B	2.50	2.60			
			64.00	0.05m			2.80						
			63.95		Extremely strong dark grey LIMESTONE (no arising's). (Cornbrash Formation)		2.85						
					Hole Terminated at 2.85m bgl.								

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
No groundwater encountered

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** Lakeview Drive, Bicester		2.00
TP126	**Project Number:** NTE2366		0.65 Pit Dimensions (m) 0 Degrees
	Client: Sladen Estates Ltd		
Hole Type: TP	**Plant:** JCB 3CX	**Start & End Date:** 16/08/2017	Stability: Remain stable throughout
Ground Level (m AOD): 66.95		**Eastings & Northings:** 457810E 221656N	Engineer: LC / Checker: RPD

Groundwater		Strata					Samples			In-Situ Tests		
Strike	Strike Details	Backfill	Level (m AOD)	Thickness	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			66.65	0.30m	Grass over brown slightly clayey slightly gravelly SAND with frequent rootlets throughout. Gravel is fine to coarse angular to sub-angular flint and sandstone with rare brick. (Topsoil)	0.30	ES	0.10	0.20			
			66.30	0.35m	Firm brown occasionally mottled grey slightly gravelly sandy CLAY. Gravel is fine and medium sub-angular to sub-rounded, sandstone and limestone. Occasional rootlets. Rare shell fragments. (Made Ground)	0.65	ES	0.40	0.50			
					0.3m - 0.55m: Coarse subangular gravel noted to be covering a land drain.		ES	0.70	0.80			
					0.55m - 0.65m: 100mm clay land drain noted.		D	0.80	0.90			
				1.35m	Stiff grey mottled orange and white sandy CLAY with occasional sand lenses. (Alluvium)		B	1.00	1.50			
			64.95	0.40m	Firm dark grey gravelly CLAY. Gravel is fine and medium sub-angular mudstone. (Weathered Kellaways Clay Member)	2.00	D	2.10	2.20			
			64.55	0.05m	Extremely strong dark grey LIMESTONE (no returns). (Cornbrash Formation)	2.40						
			64.50		Hole Terminated at 2.45m bgl.	2.45						

Remarks

Reason for Termination:
Terminated in hard ground

Groundwater Notes:
No groundwater encountered

Other Remarks:
1. No olfactory or visual evidence of contamination noted. 2. Backfilled with arising's upon completion.

Legend

Samples:
B - Bulk
D - Disturbed
ES - Environmental Sample

Groundwater Strikes:
Groundwater Strike Resting
Groundwater Level

In-Situ Tests:
HSV - Hand Shear Vane Test
PID - Photo Ionisation Detector Test

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APPENDIX 3

DRILLERS' LOGS

Geotron UK

DRILLING LOG

Rig crew: NB+T.M | Borehole Reference: BH 112

Unit E201B, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Sheet of | Weather: Dry

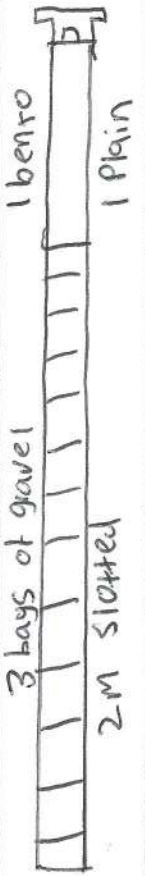
Job Ref: MTE2366 | Site Location: Bicester | Client: BWB | Day: thursday | Date: 17/8/17 | Borehole Diameter(s): 150MM

Depth (mbgl)	Strata Description
GL	grass over firm brown sandy clay
0.80	firm orange/gray/brown sandy clay
2.10	firm gray clay
3.00	gray limestone

Borehole completed at (m): | Borehole continues

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B1	0.10	0.60												
B2	0.80	1.00												
S3	1.00	1.45	1	1	1	2	1	2	6			0.80	Dry	
S4	2.00	2.45	1	1	1	2	2	3	8			1.00	Dry	
B5	2.00	2.50												
S6	3.00		12	13/6S	50/0							1.00	Dry	
S7	3.20		25/5	50/0								1.00	Dry	

Installation Details



Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	Y	Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour	Y	Time taken over 1 hour (dayworks)
Casing Reduced from		to	at metres Time taken (dayworks)

From	To	Description

Dayworks hours | Standing hours

Chiselling

From (m) to (m)	Time (mins)
3.10 – 3.20	60 Min

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total

Well Diameter: Plain 1M | Screen 2M to

Well Materials Used: Gravel 3 | Bento 1

Quantity (bags)

Other Materials Used (e.g. lost cones/shoes etc.)

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
4			3	

Rig Type	Dando	Time on Site	7.30 AM
Name	N. Binnall	Time off site	6 PM

Foreman's Name | Foreman's Signature | Engineer's Name | Engineer's Signature | Well Tag

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.

Geotron UK

DRILLING LOG

Rig crew: NB + AM

Borehole Reference: BH109

Unit E201B, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Sheet of

Weather: Dry

Job Ref: NTE2366 | Site Location: Bicester | Client: BWB | Day: Thursday | Date: 17/8/17

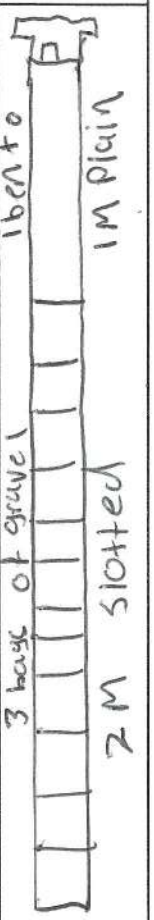
Borehole Diameter(s): 150MM

Depth (mbgl)	Strata Description
GL	grass over firm brown sandy clay
0.70	firm gray/brown mottled clay
2.60	Stiff gray clay
3.00	gray limestone

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B1	0.10	0.60												
B2	0.70	1.00												
S3	1.00	1.45	1	1	1	1	2	2	6			0.30	Dry	
S4	2.00	2.45	1	2	2	2	3	4	11			1.00	Dry	
S5	3.00	3.45	25/5	50/0								1.00	Dry	
S6	3.30		25/0	50/0								1.00	Dry	

Borehole completed at (m): 3.30 M | Borehole continues: N

Installation Details



Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	Y	Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour	Y	Time taken over 1 hour (dayworks)
Casing Reduced from		to	at metres — Time taken (dayworks)

From	To	Description

Dayworks hours:

Standing hours:

Chiselling

From (m) to (m)	Time (mins)
3.10–3.30	60min

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total

Well Diameter

Plain 1M Screen 2M to

Well Materials Used: Gravel 3 | Bento 1

Quantity (bags)

Other Materials Used (e.g. lost cones/shoes etc.)

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
4			2	

Rig Type: Dando | Time on Site: 7.30AM

Name: N. Binnall | Time off site: 5PM

Foreman's Name

Foreman's Signature

Engineer's Name

Engineer's Signature

Well Tag

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.

Geotron UK

DRILLING LOG

Rig crew: NB + AM

Borehole Reference: BH 107

Unit E2018, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Sheet of

Weather: dry

Job Ref: NTE2366 | Site Location: Bicester | Client: BWB | Day: Wednesday | Date: 16/8/17

Borehole Diameter(s): 150MM

Depth (mbgl)	Strata Description
GL	grass over stiff brown sandy clay
0.70	stiff orange/brown sandy clay
1.10	stiff gray/brown clay
2.30	stiff gray clay
3.00	gray limestone

BH Cont: N Y/N | Casing (depth m) - 1M | BH Complete (depth) - 3.40

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B1	0.10	0.60												
B2	0.70	1.00												
S3	1.00	1.45	2	1	1	1	1	2	5			0.80	dry	
B4	1.00	1.50												
S5	2.00	2.45	2	1	2	2	2	2	8			1.M	Dry	
B6	2.30	2.70												
S7	3.00	3.30	25/5	50/5								1.00	dry	
S8	3.30	3.40	25/5	50/5								1.00	dry	

Installation Details

Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	Y/N	Time taken over 1 hour (dayworks)	
Service Pit	up to 1 hour	Y/N	Time taken over 1 hour (dayworks)	
Casing Reduced from		to	at metres	Time taken (dayworks)

From	To	Description

Dayworks/Standing

Chiselling

From (m) to (m)	Time (mins)
[redacted]	60min
3.20-3.40	

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total

Well Diameter

Plain	1	Screen	2.4 to

Well Materials Used

	Gravel	Bento
Quantity (bags)	4	1

Other Materials Used (e.g. lost cones/shoes etc.)

Well Tag

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
4			4	

Rig Type	Dando	Time on Site	7.30 AM
Name	N. Binnall	Time off site	5PM

Foreman's Name | Foreman's Signature

Engineer's Name | Engineer's Signature

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.

Geotron UK

DRILLING LOG

Unit E201B, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

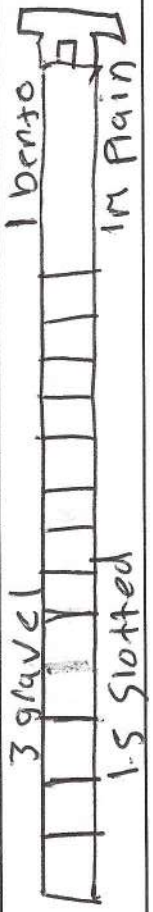
Rig crew: NB+AM | Borehole Reference: BH106 | Sheet of | Weather: Dry

Job Ref: NTE2.366 | Site Location: Bicester | Client: BWB | Day: Wednesday | Date: 16/8/17 | Borehole Diameter(s): 150MM

Depth (mbgl)	Strata Description
GL	grass over stiff brown sandy clay
0.50	firm yellow/brown sandy gravely clay
1.20	stiff gray clay
2.50	gray ~~stiff~~ limestone

BH Cont: N Y/N | Casing (depth m) - 2M | BH Complete (depth) - 2.70M

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B1	0.10	0.40												
B2	0.50	1.00												
S3	1.00	1.45	1	2	1	1	1	2	5			0.90	dry	
B4	1.20	2.00												
S5	2.00	2.45	1	2	2	3	3	4	12			1.80	dry	
S6	2.55		25/15	50/10								2.06	1.80	
S7	2.60	2.70	25/5	50/5								2.00	1.80	



Installation Details

Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	Y/N	Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour	Y/N	Time taken over 1 hour (dayworks)
Casing Reduced from		to	at metres Time taken (dayworks)

From	To	Description

Dayworks/Standing

Chiselling

From (m) to (m)	Time (mins)
2.55-2.60	60min

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total
	2.50	fast				1.80	

Well Diameter: Plain 1M | Screen 1.5 to

Well Materials Used: Gravel 3 | Bento 1

Other Materials Used (e.g. lost cones/shoes etc.)

Well Tag

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
4			3	

Rig Type	Dando	Time on Site	7.30
Name	N. Binnall	Time off site	5PM

Foreman's Name | Foreman's Signature | Engineer's Name | Engineer's Signature

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.

Geotron UK

DRILLING LOG

Rig crew: NB + AM | Borehole Reference: BH 101 | Weather: Dry

Unit E2018, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk | Sheet of

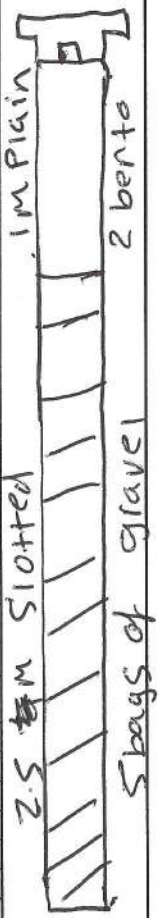
Job Ref: NTE2366 | Site Location: Bicester | Client: BWB | Day: Tuesday | Date: 15/8/17 | Borehole Diameter(s): 150MM

Depth (mbgl)	Strata Description
GL	grass over firm brown sandy clay
0.40	firm orange/brown sandy clay
2.20	firm gray gravely clay
3.40	gray limestone

BH Cont: N Y/N | Casing (depth m) - 2M | BH Complete (depth) - 3.5M

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B1	0.10	0.40												
B2	0.40	0.90												
S3	1.00	1.45	1	1	1	2	2	2	7					
S4	2.00	2.45	2	3	1	3	4	4	12					
B5	2.50	3.00												
S6	3.00	3.45	2	3	3	4	4	31/5						
S7	3.50		23/5	50/0										

Installation Details



Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	Y/N		Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour	Y/N		Time taken over 1 hour (dayworks)
Casing Reduced from		to	at metres	Time taken (dayworks)

From	To	Description

Dayworks/Standing

Chiselling

From (m) to (m)	Time (mins)
3.40 – 3.50	60 Min

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total

Well Diameter: Plain 1 | Screen 2.5 to

Well Materials Used: Gravel 5 | Bento 2

Other Materials Used (e.g. lost cones/shoes etc.)

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
4			3	

Rig Type	Pando	Time on Site	7.30 AM
Name	N. Binna II	Time off site	60M

Foreman's Name | Foreman's Signature | Engineer's Name | Engineer's Signature | Well Tag

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.

Geotron UK

DRILLING LOG

Unit E201B, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Rig crew	NB + AM	Borehole Reference	BH 108
		Sheet of	Weather Dry

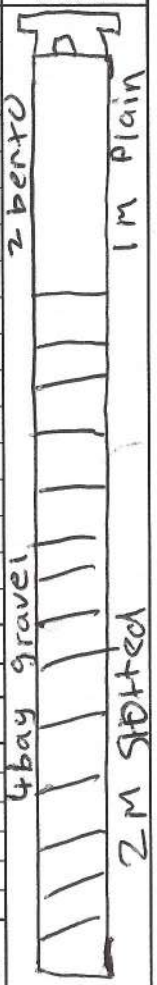
Job Ref: NTE2366 | Site Location: Bicester | Client: BWB | Day: Tuesday | Date: 15/8/17 | Borehole Diameter(s): 150 mm

Depth (mbgl)	Strata Description
GL	grass over firm brown sandy Clay
0.40	firm brown/gray mottled clay
2.50	stiff gray clay
3.00	gray ~~Mudstone~~ Limestone

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B1	0.10	0.40												
B2	0.40	1.00												
S3	1.00	1.45	1	1	1	2	2	2	7			0.80	Dry	
S4	2.00	2.45	1	2	2	2	3	4	11			1.80	Dry	
B5	2.50	3.00												
S6	3.00		25/0	50/10										
S7	3.20		25/0	50/5										

BH Cont N Y/N | Casing (depth m) - 2M | BH Complete (depth) - 3.20 m

Installation Details



Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	Y/N	Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour	Y/N	Time taken over 1 hour (dayworks)
Casing Reduced from		to	at metres Time taken (dayworks)

From	To	Description

Dayworks/Standing

Chiselling

From (m) to (m)	Time (mins)
3 - 3.2	60 Min

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total

Well Diameter: Plain 1 | Screen 2 to

Well Materials Used: Gravel 4 | Bento 2

Quantity (bags)

Other Materials Used (e.g. lost cones/shoes etc.)

SPT Shoe damaged

Well Tag

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
4			3	

Rig Type	Dando	Time on Site	7.30 AM
Name	W. Binnall	Time off site	6 PM

Foreman's Name | Foreman's Signature | Engineer's Name | Engineer's Signature

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.

Geotron UK

DRILLING LOG

Unit E201B, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Rig crew	NB + AM	Borehole Reference	BH 104
		Sheet of	Weather dry

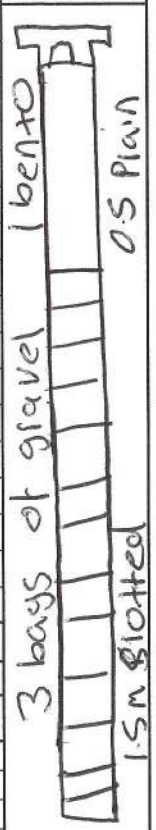
Job Ref:	NTE 2366	Site Location:	Bicester	Client:	BWB	Day: Monday	Date: 14/8/17

Borehole Diameter(s): 150MM

Depth (mbgl)	Strata Description
GL	grass over firm brown sandy gravey clay
1.70	firm orenge brown Mottled Clay
2.00	gray Mudston

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B1	0.20	0.70												
S2	1.00	1.45	5	9	6	4	2	2	14			080	Dry	
B3	1.70	2.00												
S4	2.00		25/15	50/35										
S5	2.10		25/10	50/20										

Installation Details



BH Cont N Y/N | Casing (depth m) - 2M | BH Complete (depth) - 2.1

Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	Y/N		Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour	Y/N		Time taken over 1 hour (dayworks)
Casing Reduced from		to	at metres	Time taken (dayworks)

From	To	Description

Dayworks/Standing

Chiselling

From (m) to (m)	Time (mins)
2M - 2.10M	~~60min~~ 90min

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total

Well Diameter

Plain		Screen	to

Well Materials Used	Gravel	Bento
Quantity (bags)	3	1

Other Materials Used (e.g. lost cones/shoes etc.)

Well Tag

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
3			2	

Rig Type	Dando	Time on Site	9.45 AM
Name	N. Binnall	Time off site	6PM

Foreman's Name | Foreman's Signature

Engineer's Name | Engineer's Signature

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.

Geotron UK

DRILLING LOG

Rig crew: NB + AM

Borehole Reference: BH102

Unit E201B, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Sheet of

Weather: Dry

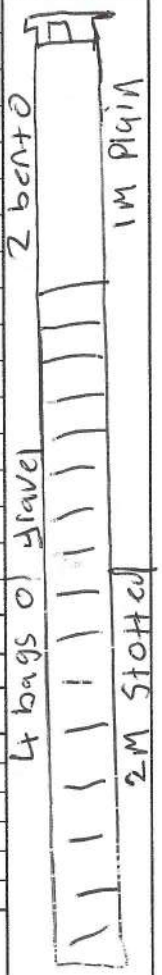
Job Ref: NTE2366 | Site Location: Bicester | Client: BWB | Day: Monday | Date: 14/8/17

Borehole Diameter(s): 150MM

Depth (mbgl)	Strata Description
GL	grass over brown clay
0.70	weathered ~~sandstone~~ yellow Limestone
2.10	gray Mudstone

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B1	0.60	0.70												
S2	1.00	1.45	8	16	6	6	9	8	29			0.80	Dry	
S3	2.00	2.05	25	50/5								1.80	Dry	
S4	3.00	3.45	5	15	15	15	20/15					2.00	1M	

Installation Details



BH Cont: N Y/N | Casing (depth m) - 2M | BH Complete (depth) - 3M

Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	Y/N	Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour	Y/N	Time taken over 1 hour (dayworks)
Casing Reduced from		to	at metres — Time taken (dayworks)

From	To	Description
		MOB Rig & Equipment to Site Chis from 0.80 - 3.00 Due To hard Strata

Dayworks/Standing: 20min Filling Bowser

Chiselling

From (m) to (m)	Time (mins)
0.80	3HR
3.00	

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total
	2.50	Fast				1.00	

Well Diameter: Plain 1M | Screen 2M to

Well Materials Used: Gravel | Bento

Quantity (bags): 4 | 2

Other Materials Used (e.g. lost cones/shoes etc.)

Well Tag

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
3			1	

Rig Type: Dando | Time on Site: 9.45AM

Name: N. Biangli | Time off site: 5PM

Foreman's Name | Foreman's Signature

Engineer's Name | Engineer's Signature

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.

Geotron UK

DRILLING LOG

Unit E201B, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Rig crew: Jim Callum | Borehole Reference: 101 | Sheet of | Weather

Job Ref: NKe2366 | Site Location: Bicester | Client: | Day: Mon | Date: 14/8/17 | Borehole Diameter(s): 6"

Depth (mbgl)	Strata Description
GL	Light yellowy brown sandy sandy gravelly clay made ground.
1.~	yellowy light brown sandy gravelly clay
2.~	Depth stay Sandy small gravelly firm clay.
2.1	mudstone
2.5	" "

Borehole completed at (m): | Borehole continues:

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B	GL	1.~										1		
SPT	1.~	1.375	4	13	13	15	15	7						
B	1	2.~										2		
D	2.~													
U100	2.~	2.1								100	/			
SPT	2.5	2.525	15	25	50/10.~									

Installation Details: flush cover 1 Plain; 1.5 Screen; bottom cap.

Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	/	Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour	/	Time taken over 1 hour (dayworks)
Casing Reduced from		to	at metres Time taken (dayworks)

From	To	Description	Dayworks hours	Standing hours
		install	1.5	

Chiselling

From (m) to (m)	Time (mins)
2.1	2.5

Well Diameter: 65

Plain: 1.~ Screen: 2.5 to 1

Well Materials Used: Gravel | Bento

Quantity (bags): 2 | 1

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total
½							

Other Materials Used (e.g. lost cones/shoes etc.)

Well Tag:

Rig Type	CP	Time on Site	9.45
Name	Jando 2500	Time off site	18.00

Sample quantities

SPT/CPT	U/U1	D/SD	B	W
2	1	1	2	

Foreman's Name | Foreman's Signature | Engineer's Name | Engineer's Signature

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.

Geotron UK

DRILLING LOG

Rig crew: CS + JM | Borehole Reference: BH103

Unit E2018, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Sheet 1 of 2 | Weather: Cloudie

Job Ref: NTE2366 | Site Location: Bicester | Client: BWO | Day: Monday | Date: 14/08/2017 | Borehole Diameter(s): 150mm

Depth (mbgl)	Strata Description
GL	Mad Ground
0.6	Light Brown/Yellow Sandy Clay Soil
2.00	Grey blue mix Stone.

Borehole completed at (m): 4.00 | Borehole continues:

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size	Installation Details
B	0.0	1.2													
SPT	1.2	1.65	1	4	6	6	10	12	34	N/A		1	✓		
B	1.90	2.20													
D	1.45	1.90													
SPT	2.20	2.50	4	12	10	40			50	NA		2	✓		
B	2.20	3.00													
SPT	3.00	3.45	5	5	10	10	10	20	50	N/A		2	3		
B	3.46	4.00													
SPT	4.00	4.225	4	2 NO	50 S							2	3		

Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	✓	Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour	✓	Time taken over 1 hour (dayworks)
Casing Reduced from		to	at metres Time taken (dayworks)

From	To	Description
14:00	15:00	Fill water Bowser

Dayworks/Standing

Chiselling

From (m) to (m)	Time (mins)
2m. 60 4m	3H

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total

Well Diameter: Plain | Screen | to

Well Materials Used: Gravel | Bento

Quantity (bags)

Other Materials Used (e.g. lost cones/shoes etc.)

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
4		1	4	

Rig Type	Dando 2500/1	Time on Site	09:15
Name	Callum Shepherd	Time off site	18:00

Foreman's Name: Callum Shepherd | Foreman's Signature

Engineer's Name | Engineer's Signature

Well Tag

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.

Geotron UK

DRILLING LOG

Rig crew	CS + JM	Borehole Reference	BH403
Job Ref: NTE2366	Site Location: Bicester	Sheet 2 of 2	Weather Sunny

Unit E201B, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Client: BWB | Day: Tuesday | Date: 15/08/2017

Borehole Diameter(s): 150

Depth (mbgl)	Strata Description	Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
	Install From 8am To 8:45 = 45min install															

Installation Details

Borehole completed at (m): 4.00 | Borehole continues

Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour		Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour		Time taken over 1 hour (dayworks)
Casing Reduced from		to	at metres Time taken (dayworks)

From	To	Description

Dayworks/Standing

Chiselling

From (m) to (m)	Time (mins)

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total

Well Diameter

Plain | Screen | to

Well Materials Used: Gravel | Bento

Quantity (bags)

Other Materials Used (e.g. lost cones/shoes etc.)

3meter Slotted MW8 Cover
1 meter Plain
4 Bag Gravel
1 Bag Bento

Well Tag

Sample quantities

SPT/CPT	U/UT	D/SD	B	W

Rig Type	Dando 2500/1	Time on Site	07:32
Name	Callum	Time off site	17:00

Foreman's Name: CJ.
Foreman's Signature: Callum Shepherd

Engineer's Name:
Engineer's Signature:

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.

Geotron UK

DRILLING LOG

Unit E201B, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Job Ref:	NTE2366	Site Location:	Bicester	Rig crew	CS + Om	Borehole Reference	BH105
Client:	BWB	Day:	Tuesday	Date:	15/08/2017	Sheet 1 of 1	Weather Sunny

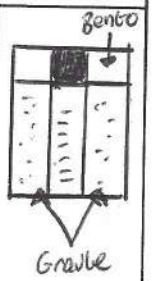
Depth (mbgl)	Strata Description
GL	Top Soil
0.2	Soft Light yellow sand
1.2	Very hard Bedrock Limestone

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B	0.2	1.20												
SPT	1.2	1.	4	14	30	20			50		0	1	–	

Borehole completed at (m) | Borehole continues

Borehole Diameter(s): 150

Installation Details



Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	✓	Time taken over 1 hour (dayworks)	
Service Pit	up to 1 hour	✓	Time taken over 1 hour (dayworks)	
Casing Reduced from		to	at metres	Time taken (dayworks)

From	To	Description
08:45	09:45	one hour chisling
10:10	10:40	30min's Install

Dayworks/Standing

Chiselling

From (m) to (m)	Time (mins)
1.2 - 1.20	60mins

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total

Well Diameter

Plain | Screen | to

Well Materials Used | Gravel | Bento

Quantity (bags)

Other Materials Used (e.g. lost cones/shoes etc.)

0.5meter Plain
1.0 meter slotted
1 Bag Gravel
½ Bag Bento
1 mu8Cover
Bottom cap
Gas Bung

Well Tag

Rig Type	dando 2500/1	Time on Site	07:32
Name	Callum	Time off site	17:00

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
1			1	

Foreman's Name: C-S

Foreman's Signature: Callum Stephen

Engineer's Name

Engineer's Signature

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.

Geotron UK

DRILLING LOG

Rig crew	CS + Jm	Borehole Reference	BH113
Job Ref:	NT62366	Site Location:	Bicester

Unit E201B, Warmco Industry Park, Manchester Road, Mossley, OL5 9AY;
Tel: 01457 833910, Fax: 01457 833920, Email: info@geotronuk.co.uk, www.geotronuk.co.uk

Sheet 1 of 1 | Weather: Sunny

Client: BwB | Day: Tuesday | Date: 15/08/2017

Borehole Diameter(s): 150mm

Installation Details: Bento / Plain / Slotted / Gravel

Depth (mbgl)	Strata Description
GL	Top Soil
0.2	Hard dark gray clay
1.50	Soft yellow Sand
1.90	Hard Gray clay
4.30	very hard Bedrock Limestone

Test Type	From (m)	To (m)	SPT 0-75	SPT 75-150	SPT 150-225	SPT 225-300	SPT 300-375	SPT 375-450	N Value or KPA	U100/ Piston blows	Recovery (%)	Casing Depth (m)	Water level (m)	Liner size
B	0.2	1.2												
SPT	1.2	1.65	1	2	3	3	3	2	11			1	-	
D	1.50	1.90												
B	1.90	2.00												
SPT	2.00	2.45	1	2	3	3	3	2	11			2		
B	2.45	3.00												
U4	3.00	3.45							37	32	100	2		
D		3.45												
SPT	3.80	4.15	1	1	1	2	2	2	7			2		
B	3.90	4.10												
SPT	4.30	4.30	25	50					50					
CPT	4.30	4.30	25	50					50					

Borehole completed at (m): 4.30 | Borehole continues:

Remarks: (Standing time, dayworks, in situ testing, visitors etc.)

Rig Set Up	up to 1 hour	✓		Time taken over 1 hour (dayworks)
Service Pit	up to 1 hour	✓		Time taken over 1 hour (dayworks)
Casing Reduced from		to		at metres Time taken (dayworks)

From	To	Description
14:00	15:00	one hour chisling
15:15	16:00	install

Dayworks/Standing

Chiselling

From (m) to (m)	Time (mins)

Water Strikes

Time	Depth (m)	Rate of Rise	Rising to (mins) 5	10	15	20	Total
13:30	1.20		1.00	1.02	1.00	1.00	

Well Diameter

Plain | Screen | to

Well Materials Used: Gravel | Bento

Quantity (bags)

Other Materials Used (e.g. lost cones/shoes etc.)

3meter Slotted
1meter Plain
3 Bag Gravelle
1 Bag Bento
1 MWS Cover
1 gas Tap
1 Bottom end Cap

Sample quantities

SPT/CPT	U/UT	D/SD	B	W
5	1	2	4	

Rig Type	Dando 2500/1	Time on Site	07:31
Name	Callum Shepherd	Time off site	17:00

Foreman's Name: Callum Shepherd
Foreman's Signature:

Engineer's Name:
Engineer's Signature:

Well Tag:

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.

APPENDIX 4

TRIP HAMMER CALIBRATION CERTIFICATE

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX59JP

SPT Hammer Ref:	AR95
Test Date:	13/04/2017
Report Date:	13/04/2017
File Name:	AR95.spt
Test Operator:	SH

Instrumented Rod Data

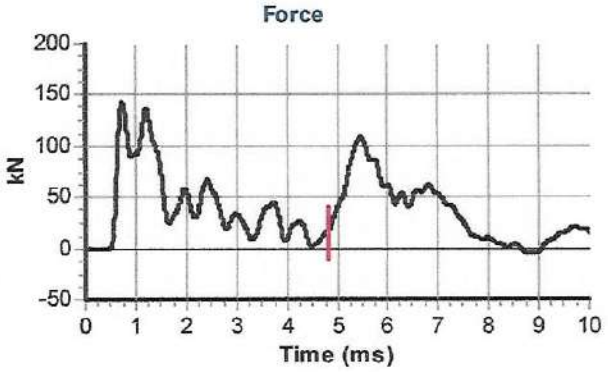
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	7080
Accelerometer No.2:	11609

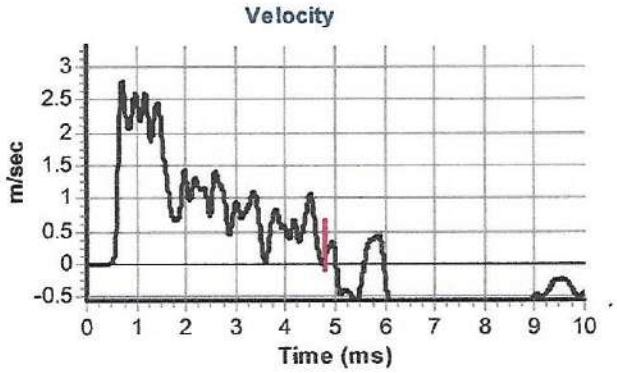
SPT Hammer Information

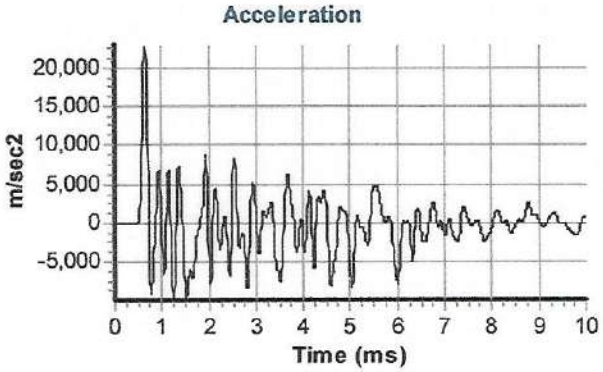
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

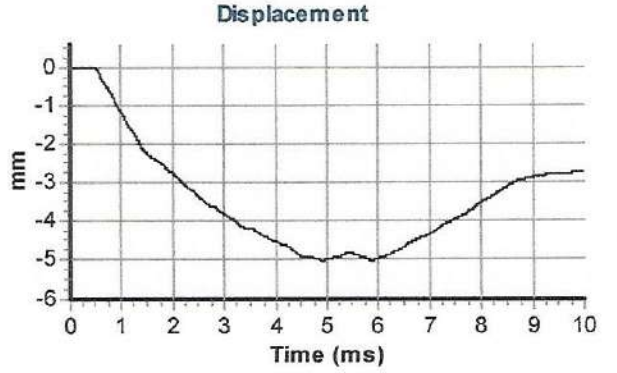
Comments / Location

CALIBRATION









Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	338

Energy Ratio E_r (%): **71**

Signed: M.GARDNER

Title: FITTER

The recommended calibration interval is 12 months

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Archway Engineering
Ainleys Industrial Estate
Elland
West Yorkshire
HX5 9JP

SPT Hammer Ref:	AR932
Test Date:	21/06/2016
Report Date:	6/21/2016
File Name:	AR932.spt
Test Operator:	SH

Instrumented Rod Data

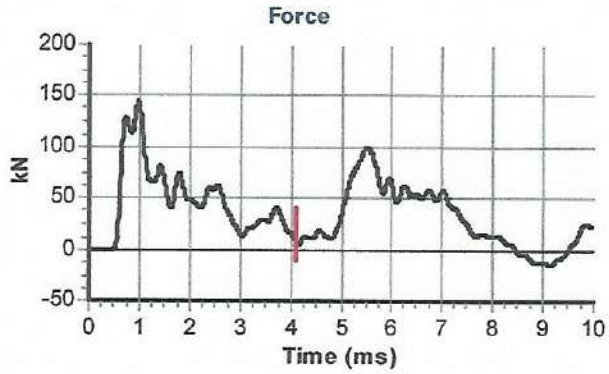
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.1
Assumed Modulus E_a (GPa):	200
Accelerometer No.1:	7080
Accelerometer No.2:	7079

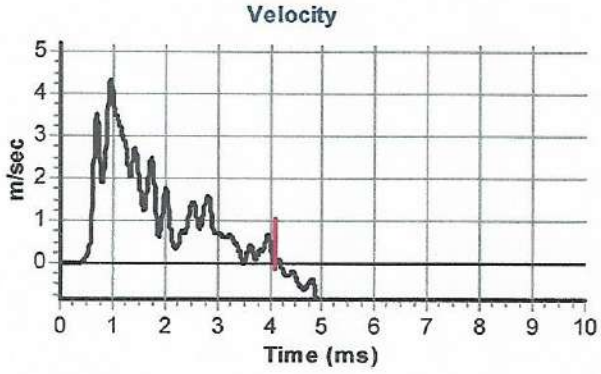
SPT Hammer Information

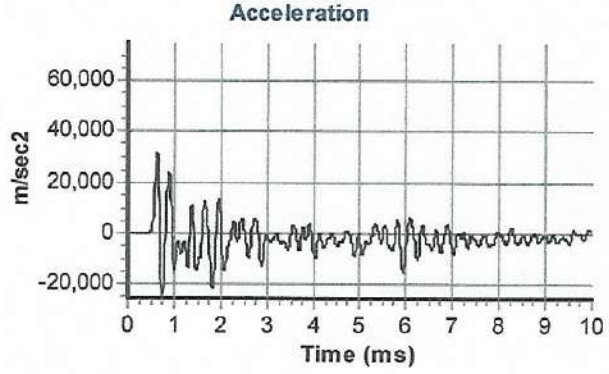
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

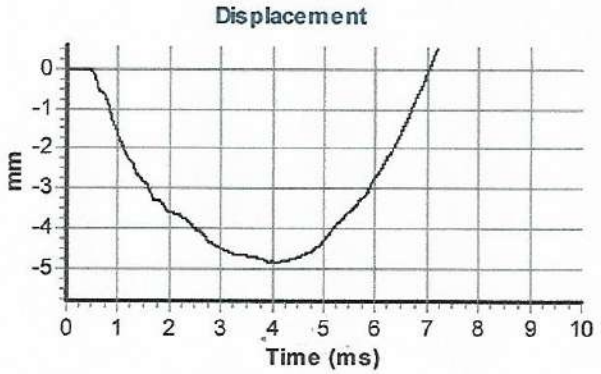
Comments / Location

CALIBRATION









Calculations

Area of Rod A (mm2):	918
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	314

Energy Ratio E_r (%): **66**

Signed: S. HOWARTH

Title:

The recommended calibration interval is 12 months

APPENDIX 5

GAS AND GROUNDWATER MONITORING RESULTS

BWB GAS AND GROUNDWATER MONITORING

Site:		Lakeview Drive, Bicester
Client:		Sladen Estates
Job No.:		NTE2366
Date:		24 August 2017
Start / End Time:		11:30 - 13:40
Engineer:		EMS
Monitoring Equipment:	Gas Meter ID	BWB00956
	PID ID	BWB00998
	Dip Tape	BWB00945
	Other	

NR = Not Recorded
Dry = No Groundwater

BWB
CONSULTANCY | ENVIRONMENT
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		

Location Reference	Relative Pressure (mbar)	Flow (l/hr)		Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	PID (ppm)	Depth to water (m)	Base of Response Zone (m)	Free-Phase Product Level Top (m)	Groundwater Elevation (m AOD)	Notes
		Peak	Steady	Peak	Steady	Peak	Steady	Min	Steady								
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	

BWB GAS AND GROUNDWATER MONITORING

Site:		Lakeview Drive, Bicester
Client:		Sladen Estates
Job No.:		NTE2366
Date:		31/08/2017
Start / End Time:		11:00-13:30
Engineer:		EMS
Monitoring Equipment:	Gas Meter ID	BWB00956
	PID ID	BWB00998
	Dip Tape	BWB00945
	Other	

NR = Not Recorded
Dry = No Groundwater

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

Weather Conditions	Start	End
(Dry / Raining)	Spitting	Dry
Cloud Cover (Oktas)	6/8	5/8
Wind Strength (m/s)	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		

Location Reference	Relative Pressure (mbar)	Flow (l/hr)		Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	PID (ppm)	Depth to water (m)	Base of Response Zone (m)	Free-Phase Product Level Top (m)	Groundwater Elevation (m AOD)	Notes
		Peak	Steady	Peak	Steady	Peak	Steady	Min	Steady								
Ambient Air Start (Calibration)																	
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	

BWB GAS AND GROUNDWATER MONITORING

Site:		Lakeview Drive, Bicester
Client:		Sladen Estates
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
	Dip Tape	BWB00945
	Other	

NR = Not Recorded
Dry = No Groundwater

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

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		

Location Reference	Relative Pressure (mbar)	Flow (l/hr)		Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	PID (ppm)	Depth to water (m)	Base of Response Zone (m)	Free-Phase Product Level Top (m)	Groundwater Elevation (m AOD)	Notes
		Peak	Steady	Peak	Steady	Peak	Steady	Min	Steady								
Ambient Air Start (Calibration)																	
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	

BWB GAS AND GROUNDWATER MONITORING

Site:		Lakeview Drive, Bicester
Client:		Sladen Estates
Job No.:		NTE2366
Date:		13.9.17
Start / End Time:		8:25 / 11:25
Engineer:		Y Lawson
Monitoring Equipment:	Gas Meter ID	BWB00957
	PID ID	BWB00998
	Dip Tape	BWB00944
	Other	

NR = Not Recorded
Dry = No Groundwater

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

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

Location Reference	Relative Pressure (mbar)	Flow (l/hr)		Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	PID (ppm)	Depth to water (m)	Base of Response Zone (m)	Free-Phase Product Level Top (m)	Groundwater Elevation (m AOD)	Notes
		Peak	Steady	Peak	Steady	Peak	Steady	Min	Steady								
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	

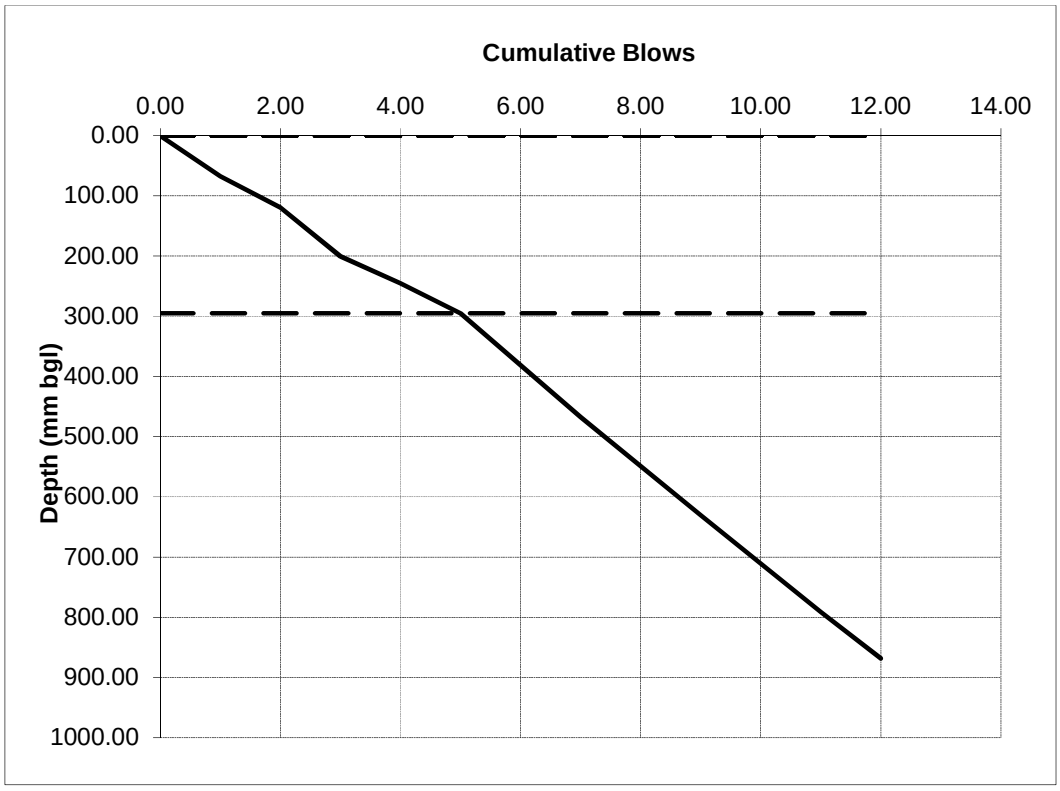
APPENDIX 6

TRL DYNAMIC CONE PENETATION RESULTS

Dynamic Cone Penetrometer

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 bgl)	CBR (%)
1	4	4	295	295	**3.2**
2	5	9	391	686	**3.0**

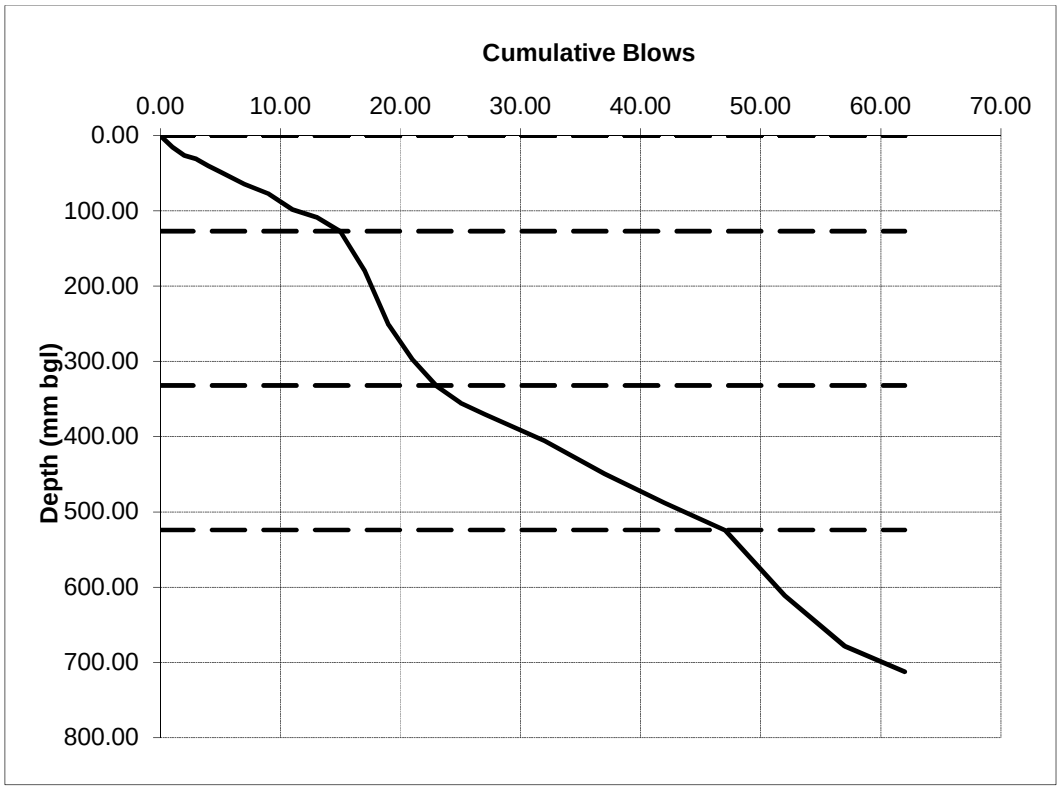


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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

Layer	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)
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**

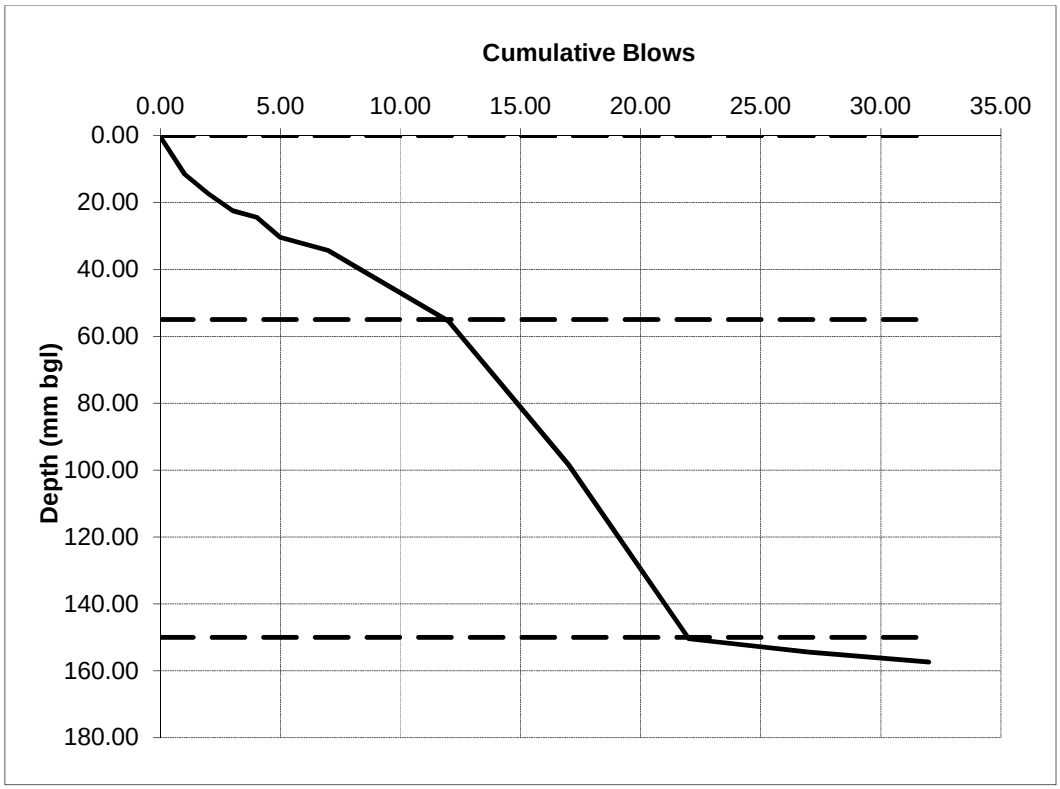


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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 bgl)	CBR (%)
1	7	7	55	55	**34.4**
2	10	17	95	150	**28.0**
3	10	27	7	157	**>100**

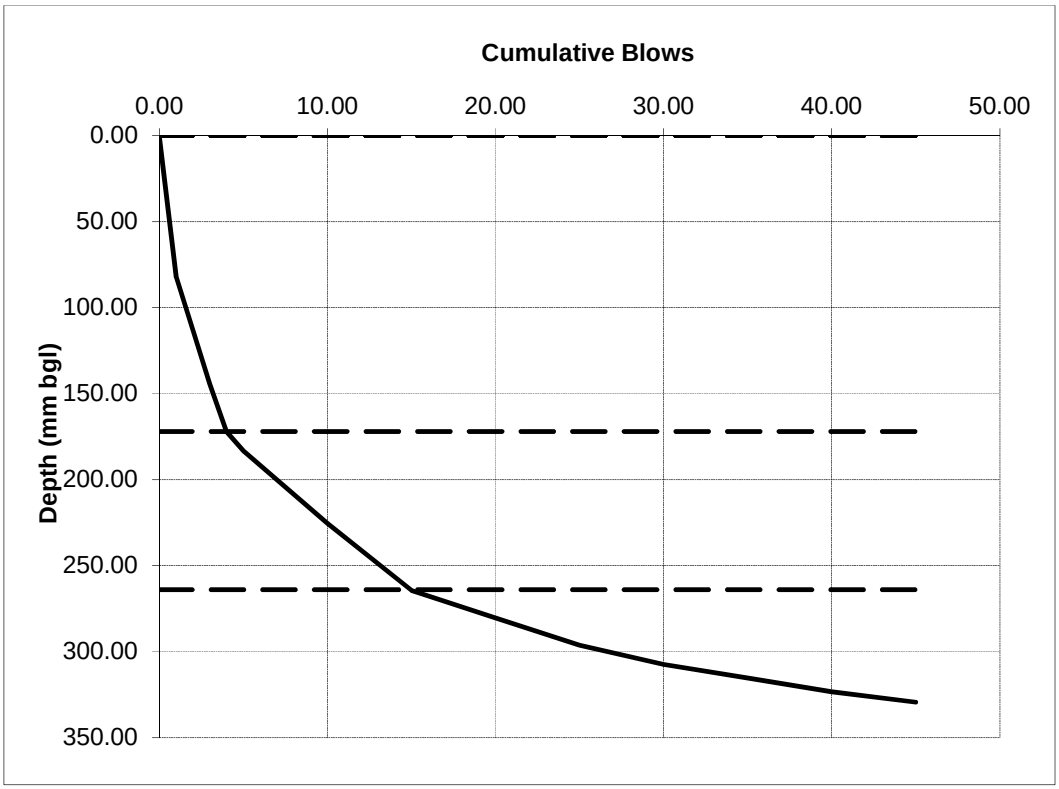


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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**

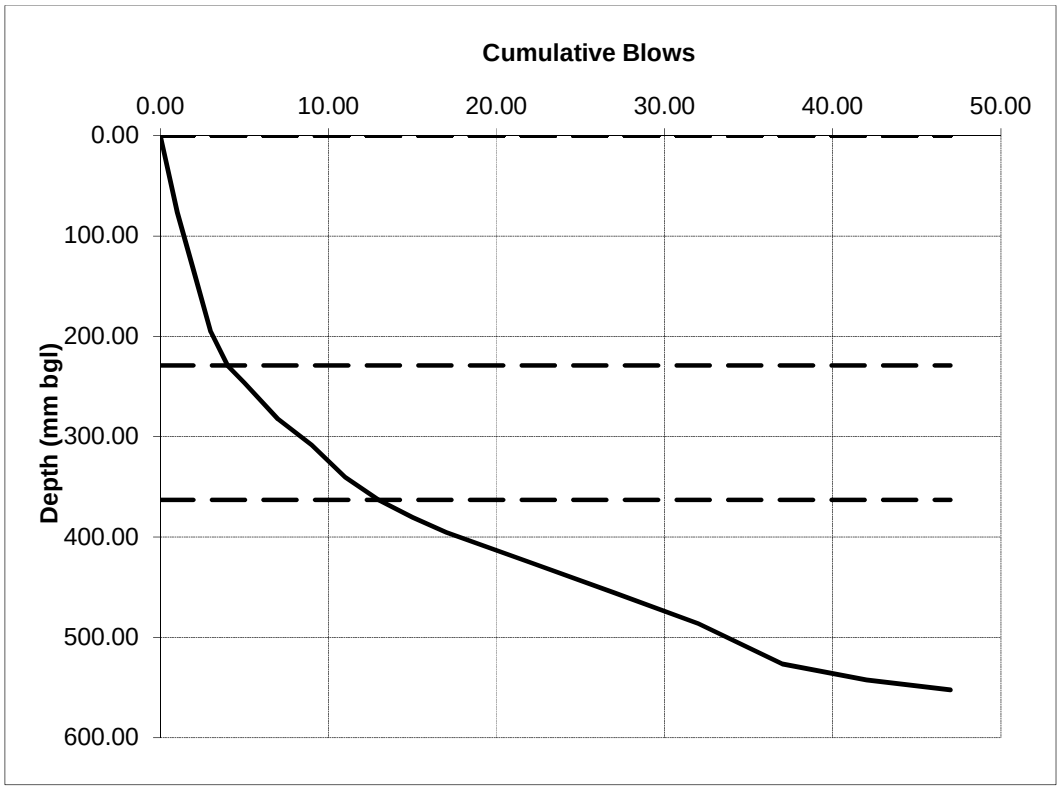


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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

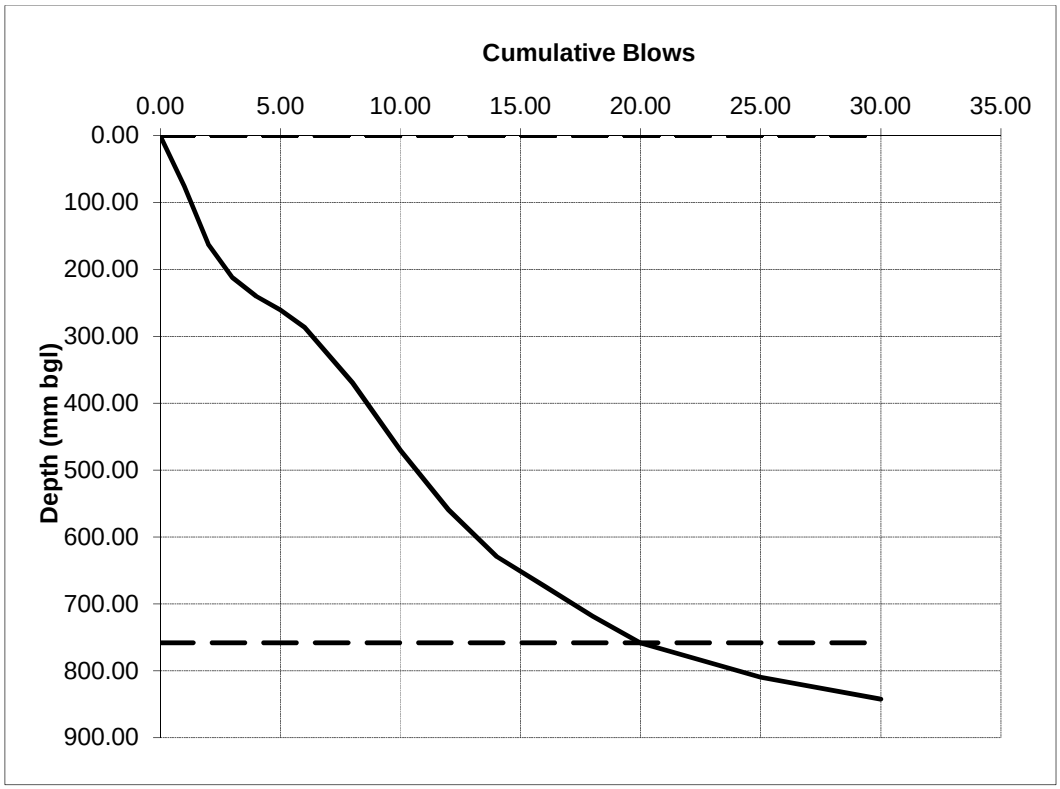


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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**

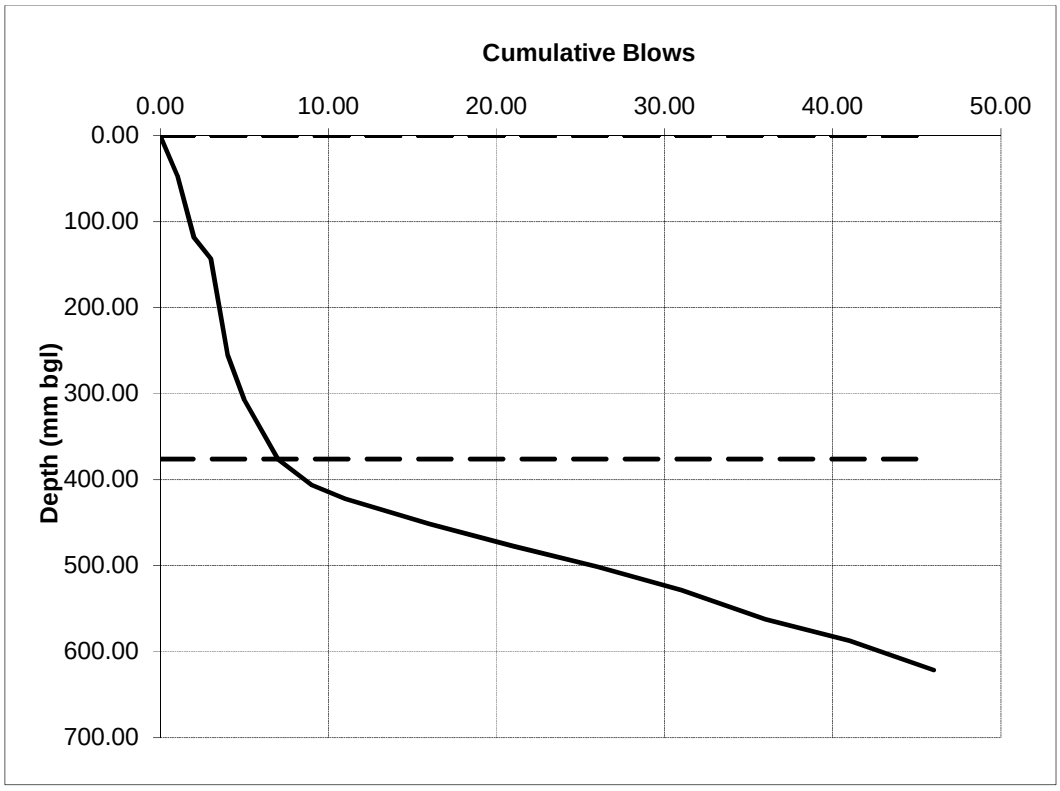


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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**

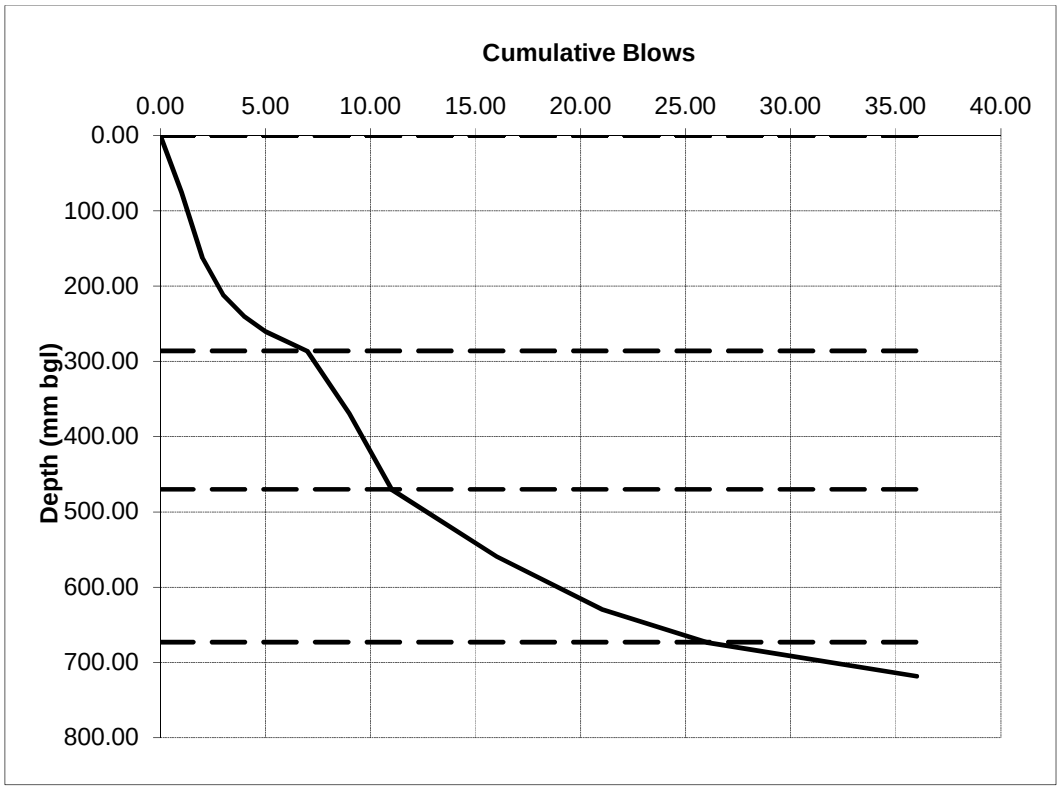


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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	Blows	Cumulative Blows	Layer Thickness (mm)	Total Depth (mm bgl)	CBR (%)
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**

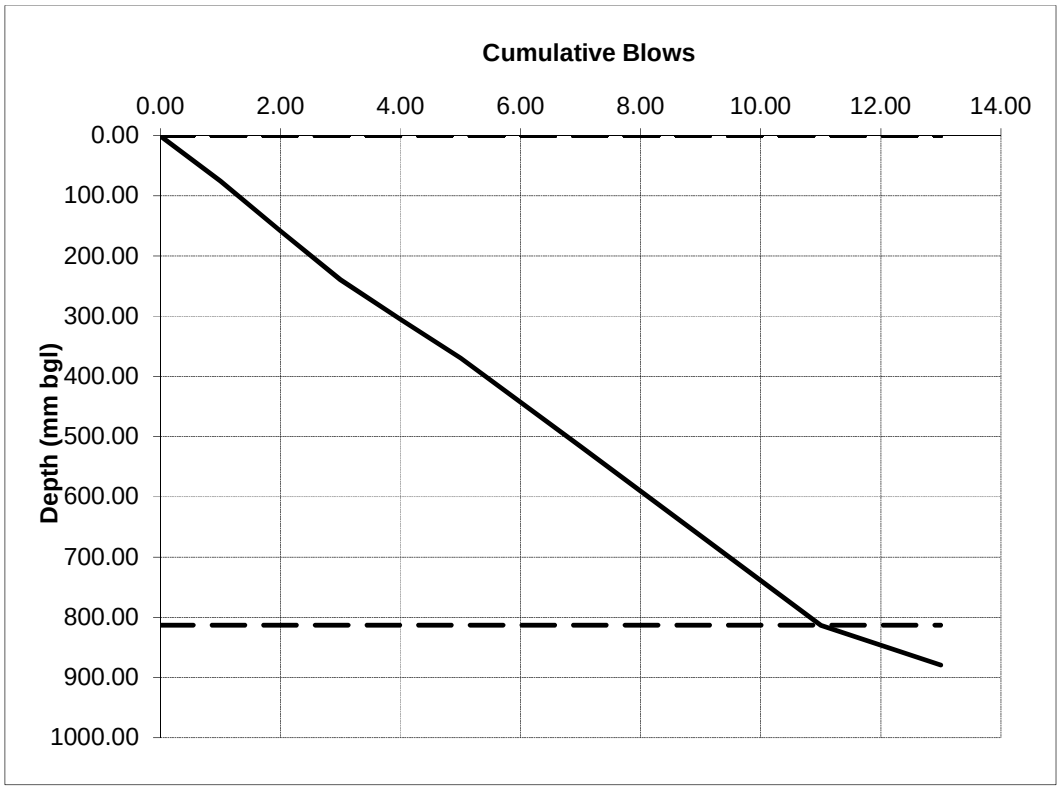


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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**

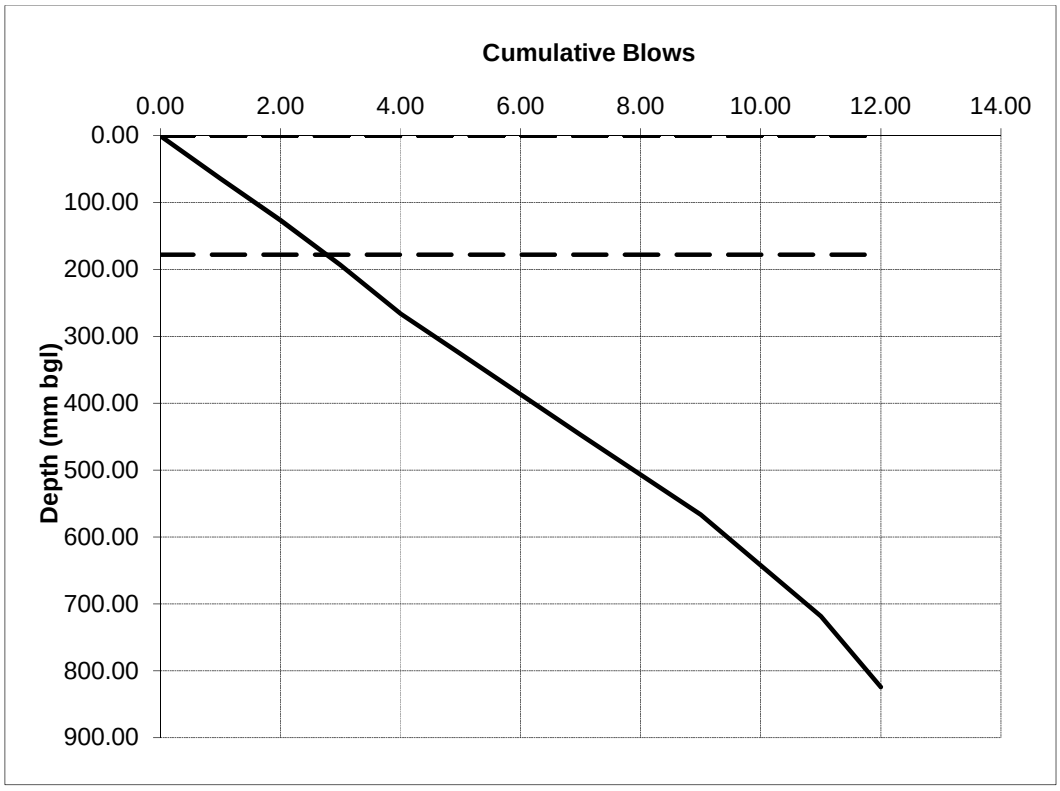


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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**

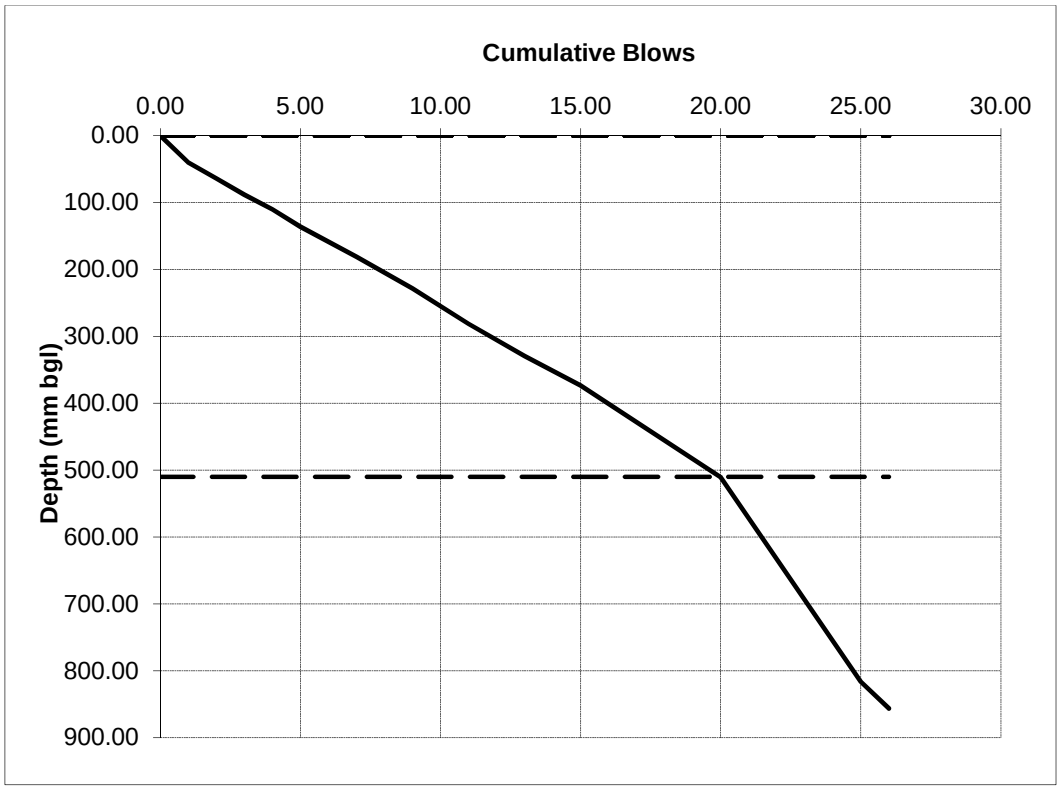


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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

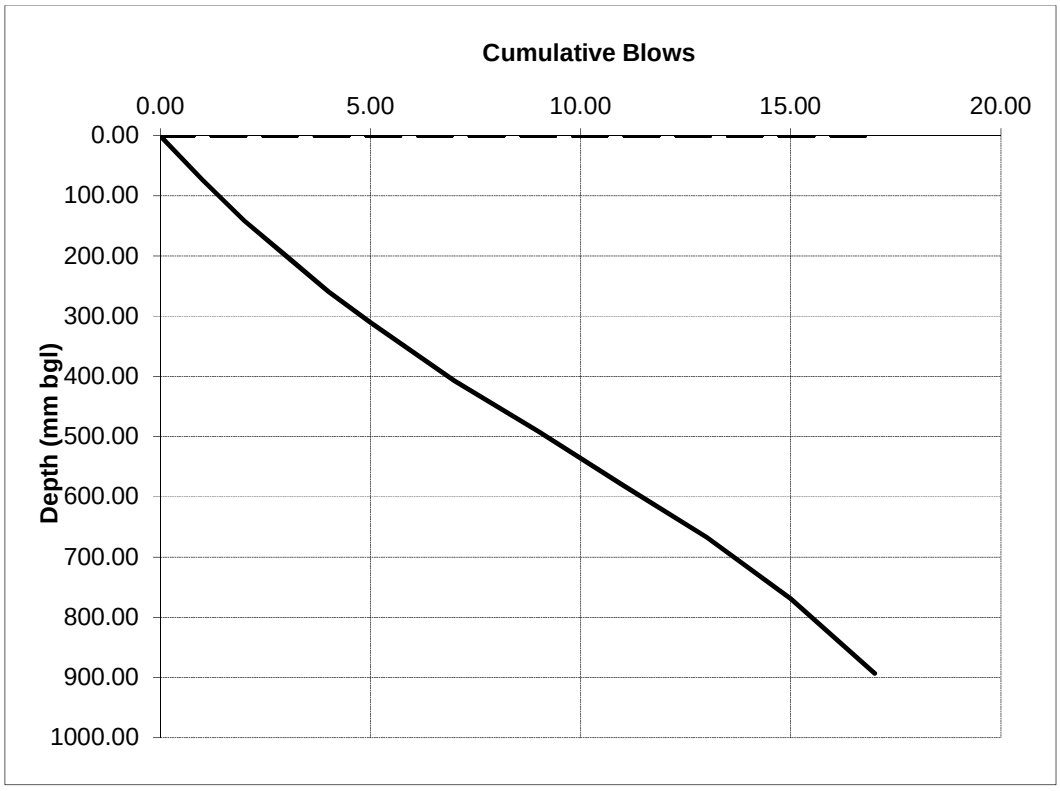


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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

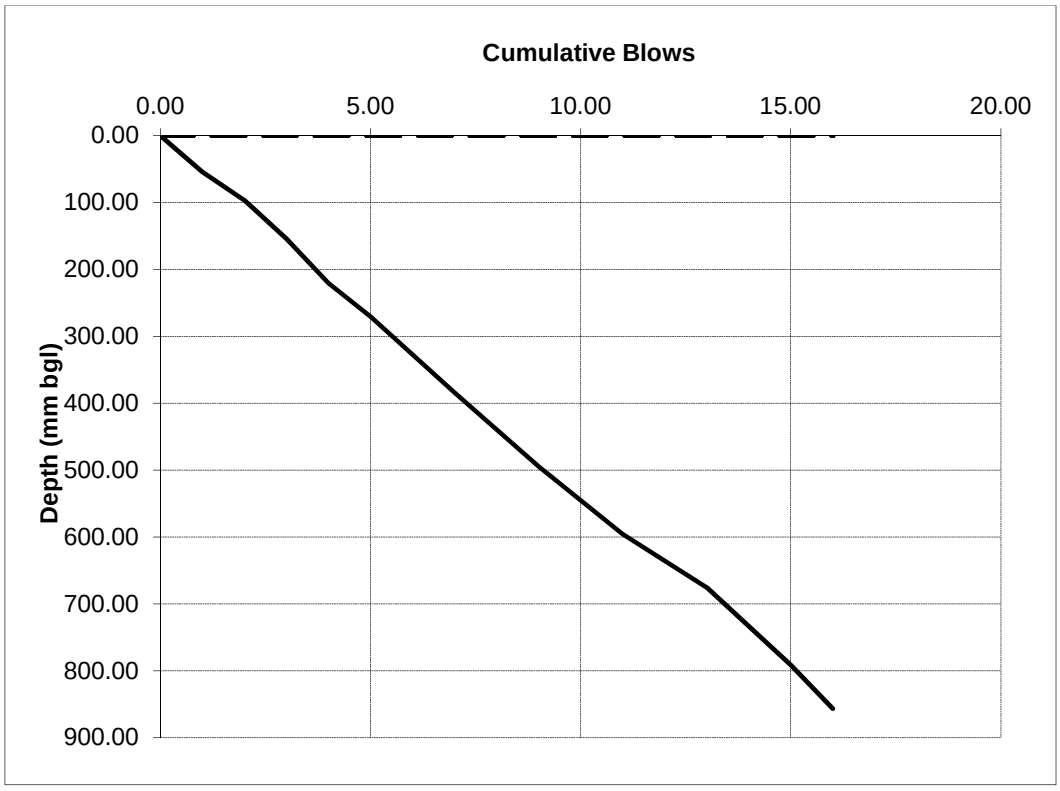


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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

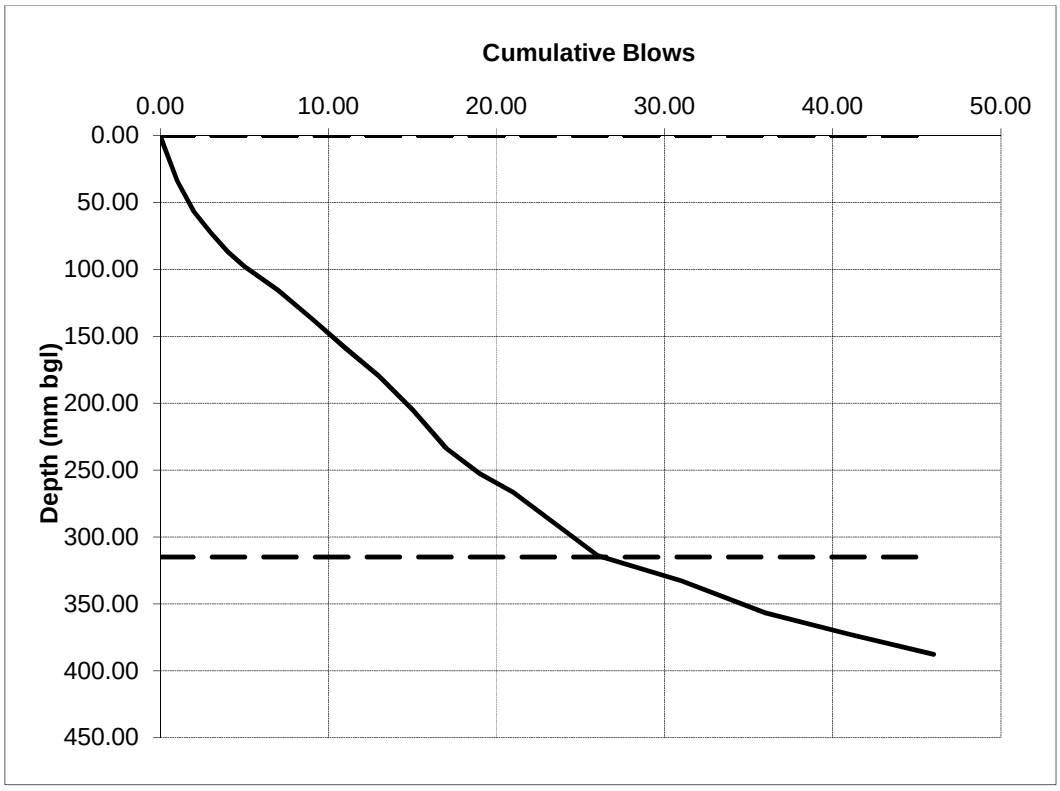


CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

Dynamic Cone Penetrometer

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**



CBR Interpretation based on the TRL Equation: Log10(CBR) = 2.480 - [1.057 x Log 10(DCP Strength)]

APPENDIX 7

SOIL AND SOIL LEACHATE CHEMICAL ANALYSIS RESULTS

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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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Analytical Report Number: 17-58560

Project / Site name: Lakeview Drive, Bicester
Your Order No: POR012935

Lab Sample Number				806393	806394	806395	806396	806397
Sample Reference				BH101	BH102	BH103	BH106	BH110
Sample Number				1	1	2	3	5
Depth (m)				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	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	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

Analytical Report Number: 17-58560

Project / Site name: Lakeview Drive, Bicester
Your Order No: POR012935

Lab Sample Number				806398				
Sample Reference				BH112				
Sample Number				5				
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				

Analytical Report Number : 17-58560

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.

Analytical Report Number : 17-58560

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	S	17-58560	806395	a			
BH106	3	S	17-58560	806396	a			
BH110	5	S	17-58560	806397	a			
BH112	5	S	17-58560	806398	a			

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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

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Analytical Report Number: 17-58244

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	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	16	10	7.9	12	11
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	Type	N/A	ISO 17025	-	-	Chrysotile- Loose Fibres	-	Chrysotile- Loose Fibres
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Detected	-	Detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.8	8.0	9.7	8.1	8.1
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 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 Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 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
Fluoranthene	mg/kg	0.05	MCERTS	0.24	< 0.05	2.2	1.2	0.67
Pyrene	mg/kg	0.05	MCERTS	0.22	< 0.05	2.1	1.1	0.60
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.12	< 0.05	1.4	0.82	0.42
Chrysene	mg/kg	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
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.16	< 0.80	17.5	9.29	4.50
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
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.7	< 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	32	19	21	21	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	41	31	72	35	36
Lead (aqua regia extractable)	mg/kg	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

Analytical Report Number: 17-58244

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	None Supplied	None Supplied	None Supplied	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	mg/kg	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)	mg/kg	10	MCERTS	27	-	460	-	-

Analytical Report Number: 17-58244

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	None Supplied	None Supplied	None Supplied	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	-	-	-	-	-

Analytical Report Number: 17-58244

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	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	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 Equivalent)	g/l	0.00125	MCERTS	0.22	0.045	0.021	0.025	0.028
Total Sulphur	mg/kg	50	MCERTS	610	2600	1000	190	750
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.015	0.094	0.060	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								
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	< 0.05	< 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
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 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	19	9.1	16	10	18
Barium (aqua regia extractable)	mg/kg	1	MCERTS	41	68	68	28	61
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.85	1.3	0.80	0.42	0.86
Boron (water soluble)	mg/kg	0.2	MCERTS	2.9	8.1	7.7	0.6	4.3
Cadmium (aqua regia extractable)	mg/kg	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	MCERTS	< 1.0	4.8	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	46	61	43	23	36
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	36	21	52	25	100

Analytical Report Number: 17-58244

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**					
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)	mg/kg	10	MCERTS	-	-	-	-	-

Analytical Report Number: 17-58244

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**					
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

Analytical Report Number: 17-58244

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	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	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
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	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	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 Equivalent)	g/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
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 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	< 0.05	< 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
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 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
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 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	8.2	22	23	14	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	27	28	25	42
Lead (aqua regia extractable)	mg/kg	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

Analytical Report Number: 17-58244

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	None Supplied	None Supplied	None Supplied	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	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)	mg/kg	10	MCERTS	-	-	-	-	-

Analytical Report Number: 17-58244

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	None Supplied	None Supplied	None Supplied	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

Analytical Report Number: 17-58244

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**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	12				
Total mass of sample received	kg	0.001	NONE	2.0				
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-				
Asbestos in Soil	Type	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 Equivalent)	g/l	0.00125	MCERTS	0.015				
Total Sulphur	mg/kg	50	MCERTS	140				
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0041				
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	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)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)pyrene	mg/kg	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 (aqua regia extractable)	mg/kg	1	MCERTS	16				
Barium (aqua regia extractable)	mg/kg	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				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	26				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	50				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	50				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	86				

Analytical Report Number: 17-58244

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	mg/kg	10	MCERTS	< 10				
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)	mg/kg	10	MCERTS	-				

Analytical Report Number: 17-58244

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	-				

Analytical Report Number: 17-58244

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								
pH	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_4	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		

Analytical Report Number : 17-58244

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.

Analytical Report Number : 17-58244

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

Analytical Report Number : 17-58244

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 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

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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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Analytical Report Number: 17-59704

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**					
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 SO_4	µg/l	45	ISO 17025	106000	301000	88400	168000	
Sulphate as SO_4	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	ISO 17025	< 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)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	µg/l	0.01	ISO 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	
Dibenz(a,h)anthracene	µg/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	

Analytical Report Number: 17-59704

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

Analytical Report Number : 17-59704

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.

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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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Analytical Report Number: 17-59706

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 SO_4	µg/l	45	ISO 17025	633000	310000			
Sulphate as SO_4	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			

Analytical Report Number: 17-59706

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

Analytical Report Number : 17-59706

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.

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

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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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

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Analytical Report Number: 17-59709

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	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.2	7.0	7.1	7.1	
Electrical Conductivity at 20 °C	µS/cm	10	NONE	990	1900	1900	1600	
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
Sulphate as SO_4	µg/l	45	ISO 17025	103000	1090000	949000	779000	
Sulphate as SO_4	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 Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 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)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	µg/l	0.01	ISO 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	
Dibenz(a,h)anthracene	µg/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	
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.28	3.94	1.28	0.92	
Barium (dissolved)	µg/l	0.06	ISO 17025	49	97	160	30	
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	
Boron (dissolved)	µg/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	ISO 17025	< 0.2	1.0	2.2	< 0.2	
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.4	11	7.4	15	
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.9	1.2	1.4	0.8	
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.6	0.4	1.9	< 0.2	
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.0	2.6	7.6	4.0	
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

Analytical Report Number : 17-59709

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

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

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

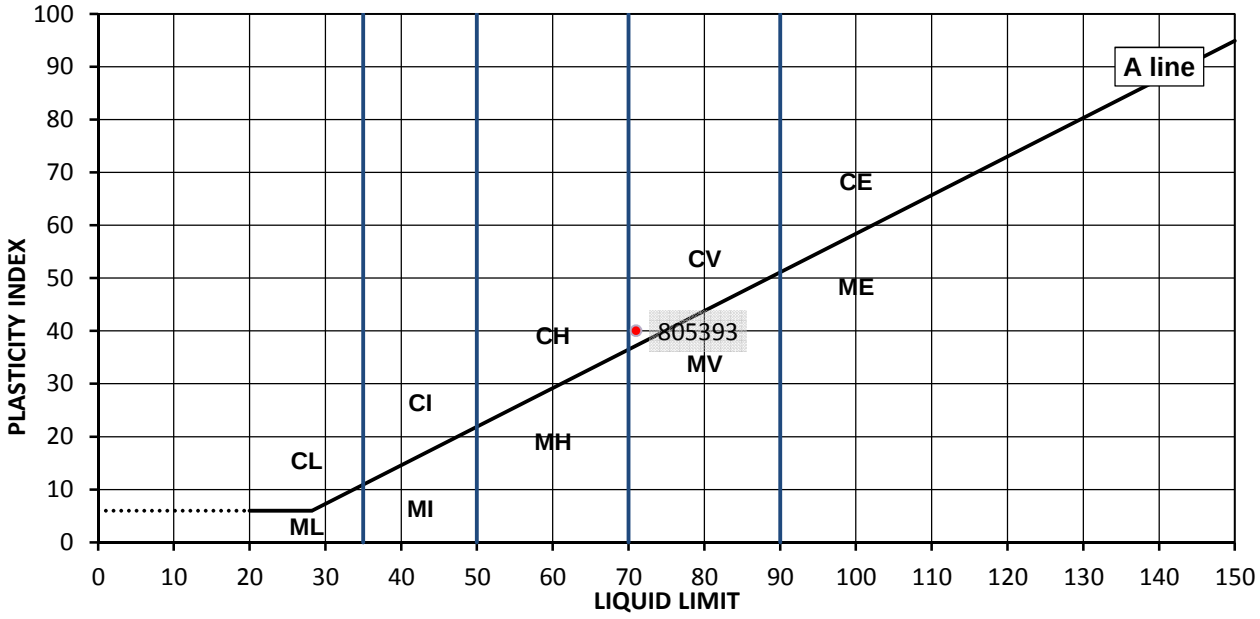
Client:	BWB Consulting Limited	Client Reference:	NTE2366
Client Address:	5th Floor Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	31/08/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site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

TEST RESULTS

Laboratory Reference: 805393
Sample Reference: Not Given

Description:	Brown sandy very gravelly CLAY	Sample Type:	B
Location:	BH106	Depth Top [m]:	0.50
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	1.00

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
22	71	31	40	49



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

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Dariusz Piotrowski
PL Laboratory Manager Geotechnical Section
Date Reported: 07/09/2017

Signed:

Sushil Sharda
Technical Manager (Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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Determination of Liquid and Plastic Limits

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UKAS TESTING 4041

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

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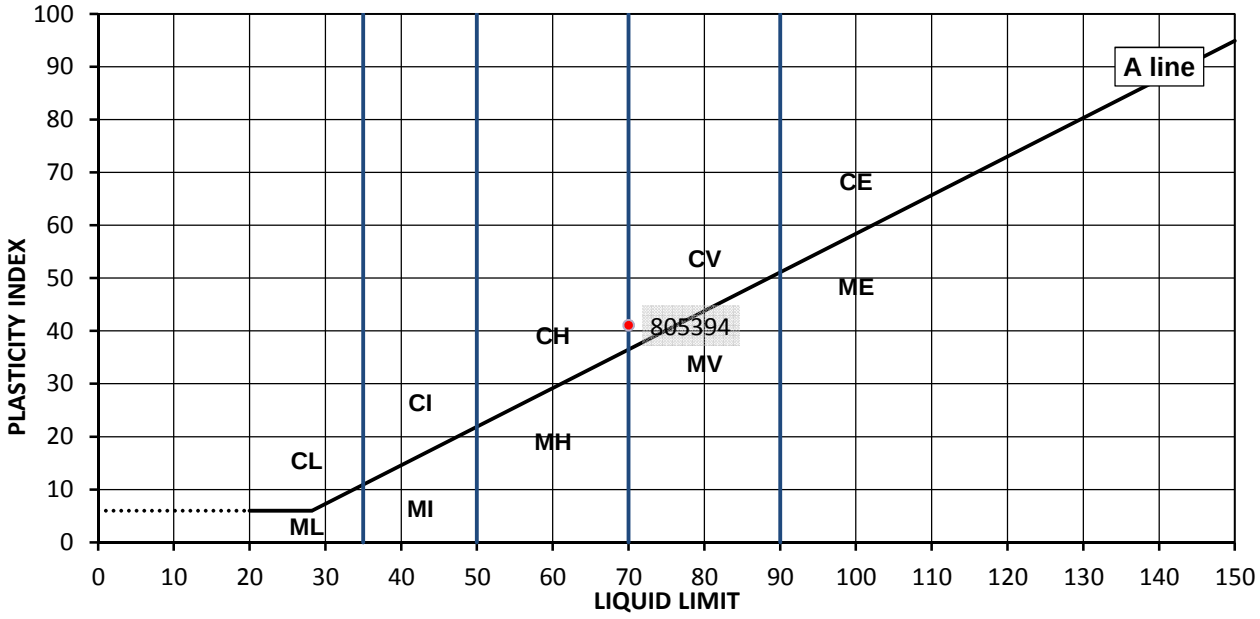
Client Address:	5th Floor Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	31/08/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 805394
Sample Reference: Not Given

Description:	Dark brown CLAY	Sample Type:	B
Location:	BH106	Depth Top [m]:	1.20
Sample Preparation:	Tested in natural condition	Depth Base [m]:	2.00

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
41	70	29	41	100



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

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

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PL Laboratory Manager Geotechnical Section
Date Reported: 07/09/2017

Signed:

Sushil Sharda
Technical Manager (Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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Croxley Green Business Park
Watford Herts WD18 8YS

UKAS TESTING 4041

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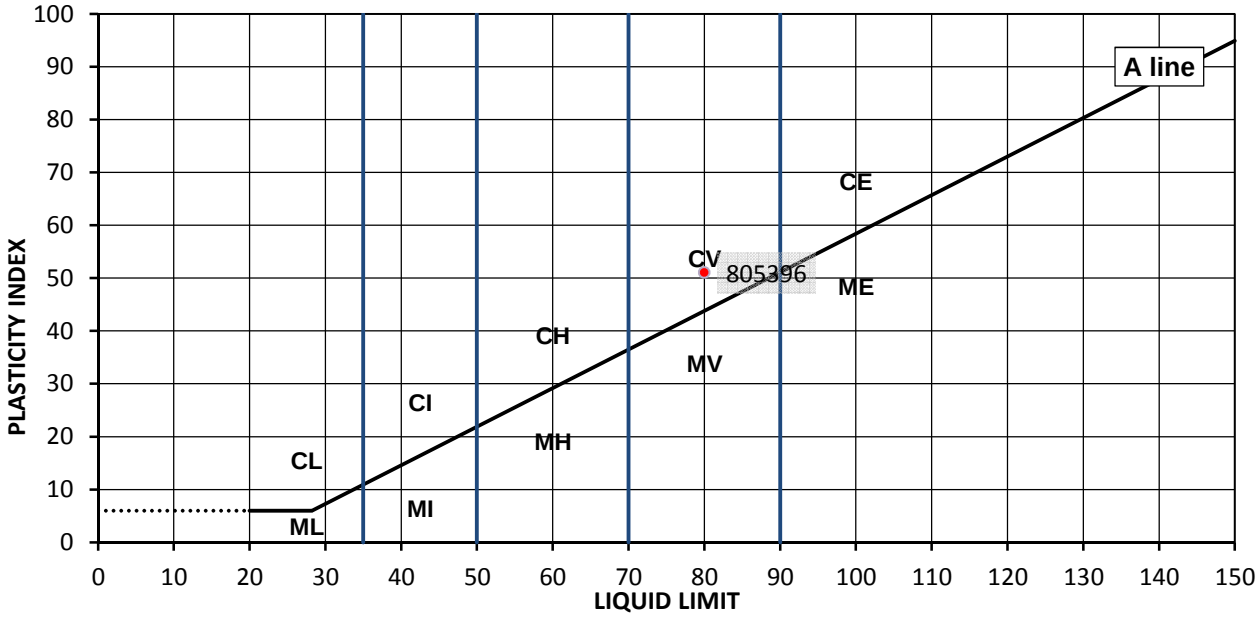
Client Address:	5th Floor Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	31/08/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 805396
Sample Reference: Not Given

Description:	Mottled brown CLAY	Sample Type:	D
Location:	BH107	Depth Top [m]:	2.00
Sample Preparation:	Tested in natural condition	Depth Base [m]:	2.45

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
35	80	29	51	100



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

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

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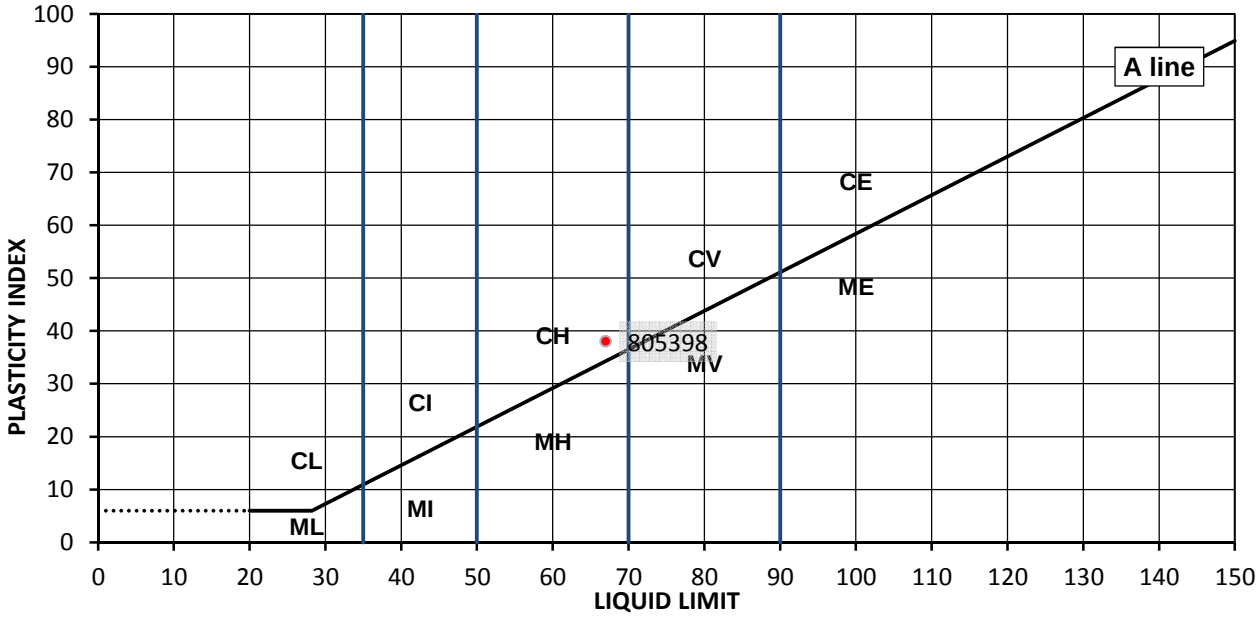
Client Address:	5th Floor Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	31/08/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 805398
Sample Reference: Not Given

Description:	Dark brown CLAY	Sample Type:	D
Location:	BH109	Depth Top [m]:	1.00
Sample Preparation:	Tested in natural condition	Depth Base [m]:	1.45

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
29	67	29	38	100



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

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

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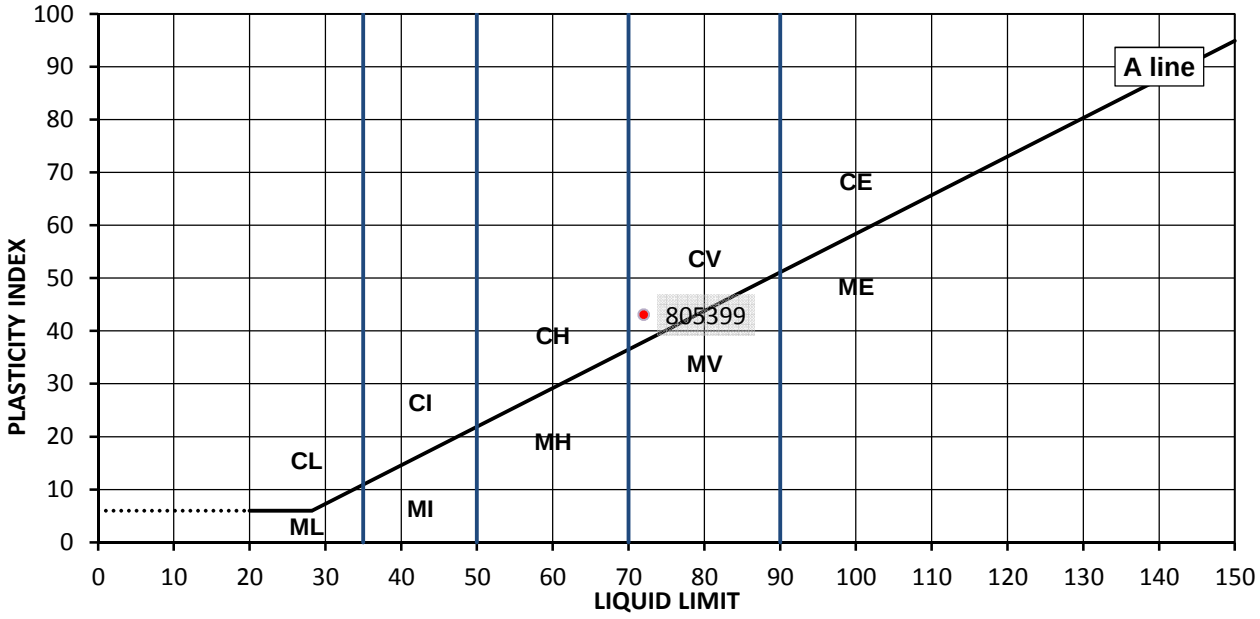
Client:	BWB Consulting Limited	Client Reference:	NTE2366
Client Address:	5th Floor Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	31/08/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site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

TEST RESULTS

Laboratory Reference: 805399
Sample Reference: Not Given

Description:	Dark brown CLAY	Sample Type:	D
Location:	BH109	Depth Top [m]:	2.00
Sample Preparation:	Tested in natural condition	Depth Base [m]:	2.45

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
30	72	29	43	100



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

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
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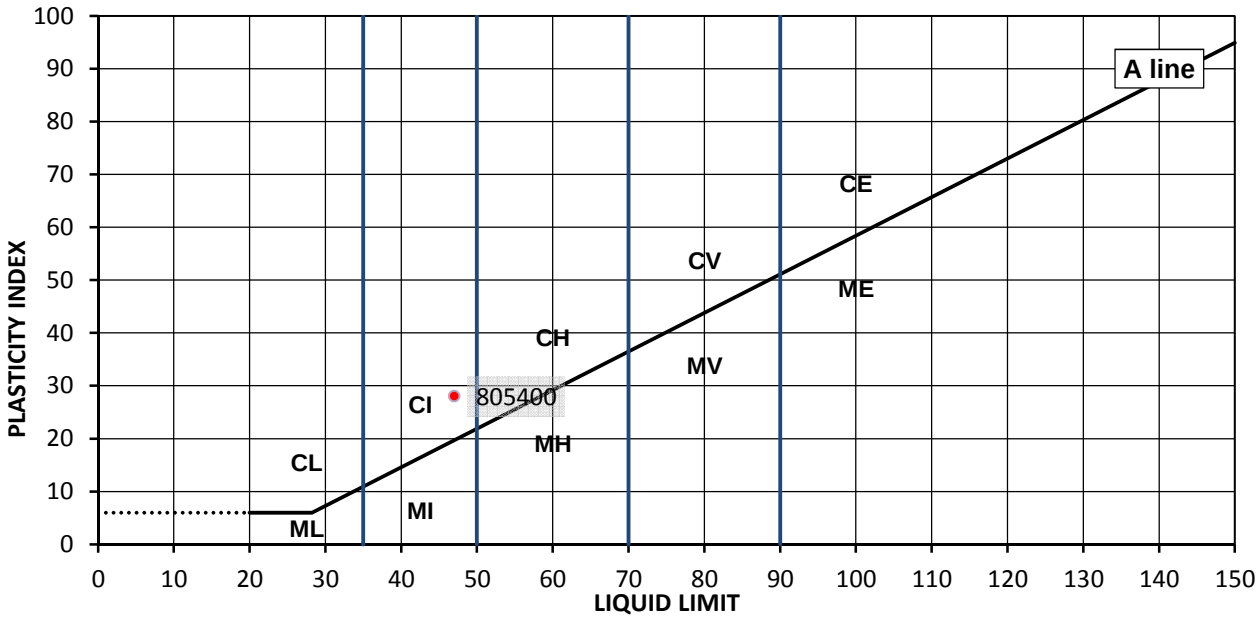
Client Address:	5th Floor Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	31/08/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 805400
Sample Reference: Not Given

Description:	Mottled Brown slightly sandy CLAY	Sample Type:	B
Location:	BH110	Depth Top [m]:	0.40
Sample Preparation:	Tested in natural condition	Depth Base [m]:	0.90

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
19	47	19	28	100



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

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
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Remarks

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PL Laboratory Manager Geotechnical Section
Date Reported: 07/09/2017

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Technical Manager (Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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7 Woodshots Meadow
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Watford Herts WD18 8YS

UKAS TESTING 4041

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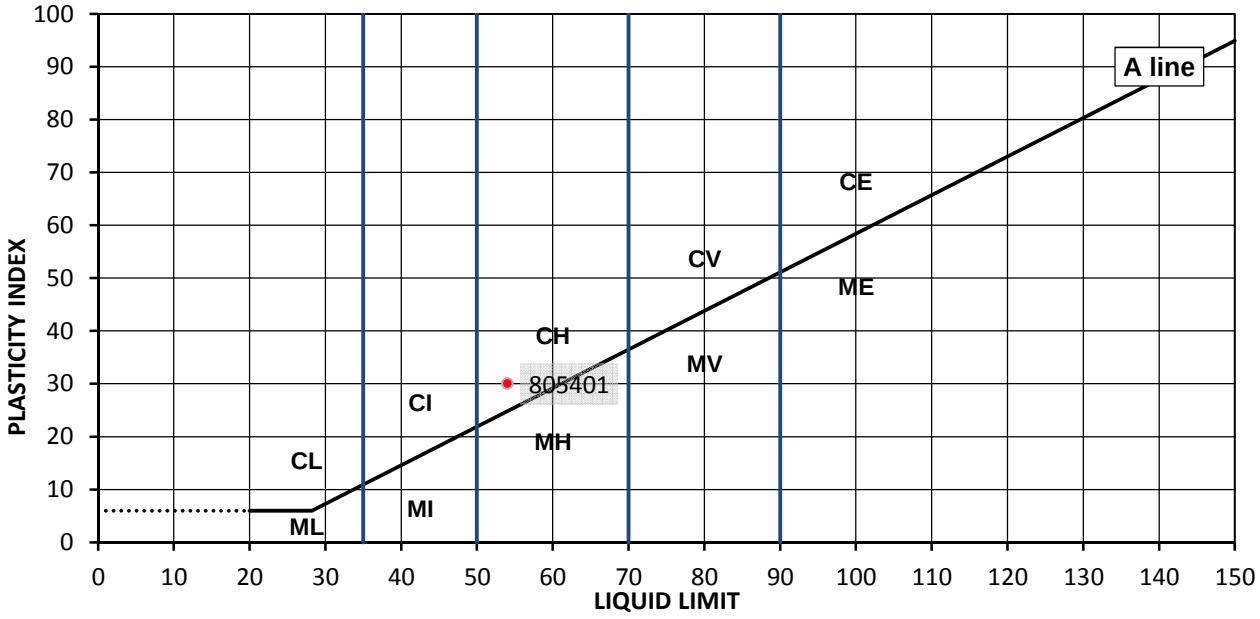
Client Address:	5th Floor Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	31/08/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 805401
Sample Reference: Not Given

Description:	Dark brown slightly gravelly slightly sandy organic CLAY	Sample Type:	D
Location:	BH110	Depth Top [m]:	3.00
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	3.38

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
82	54	24	30	92



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

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
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PL Laboratory Manager Geotechnical Section
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Sushil Sharda
Technical Manager (Geotechnical Division)

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

UKAS TESTING 4041

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 Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	01/09/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site Address:	Not Given		

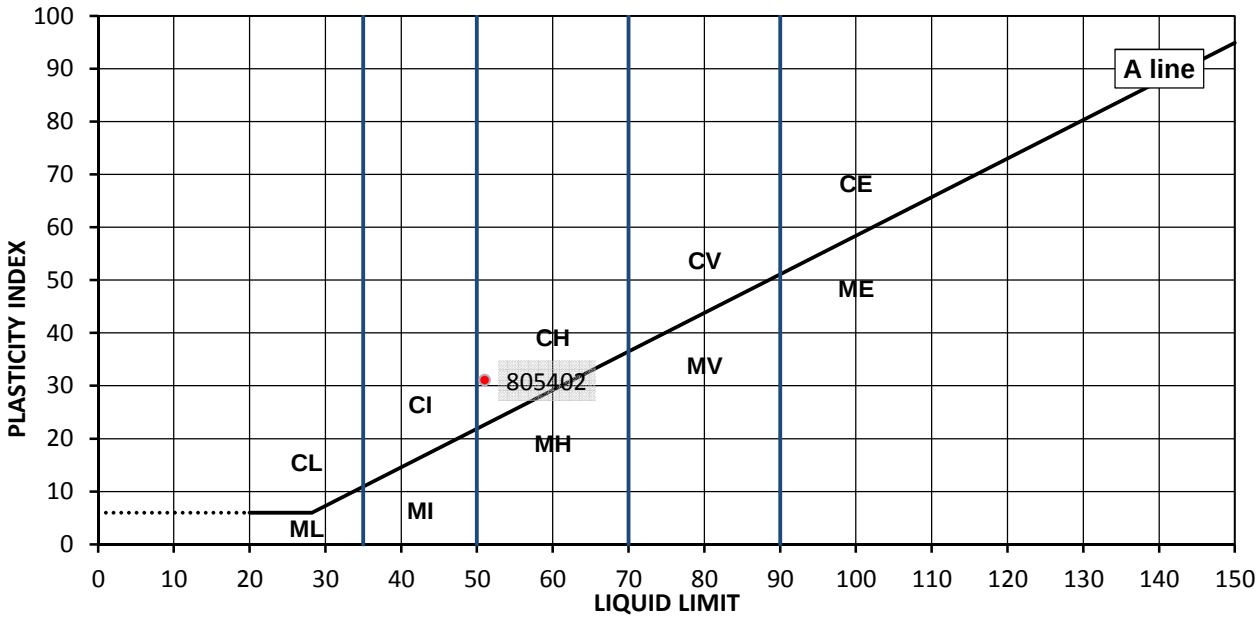
TEST RESULTS

Laboratory Reference: 805402
Sample Reference: Not Given

Description: Brown slightly gravelly slightly sandy CLAY with rootlets
Location: BH112
Sample Preparation: Tested after >425um removed by hand

Sample Type: B
Depth Top [m]: 0.60
Depth Base [m]: 1.00

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
32	51	20	31	79



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

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
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Remarks

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PL Laboratory Manager Geotechnical Section
Date Reported: 07/09/2017

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Technical Manager (Geotechnical Division)

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
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UKAS TESTING 4041

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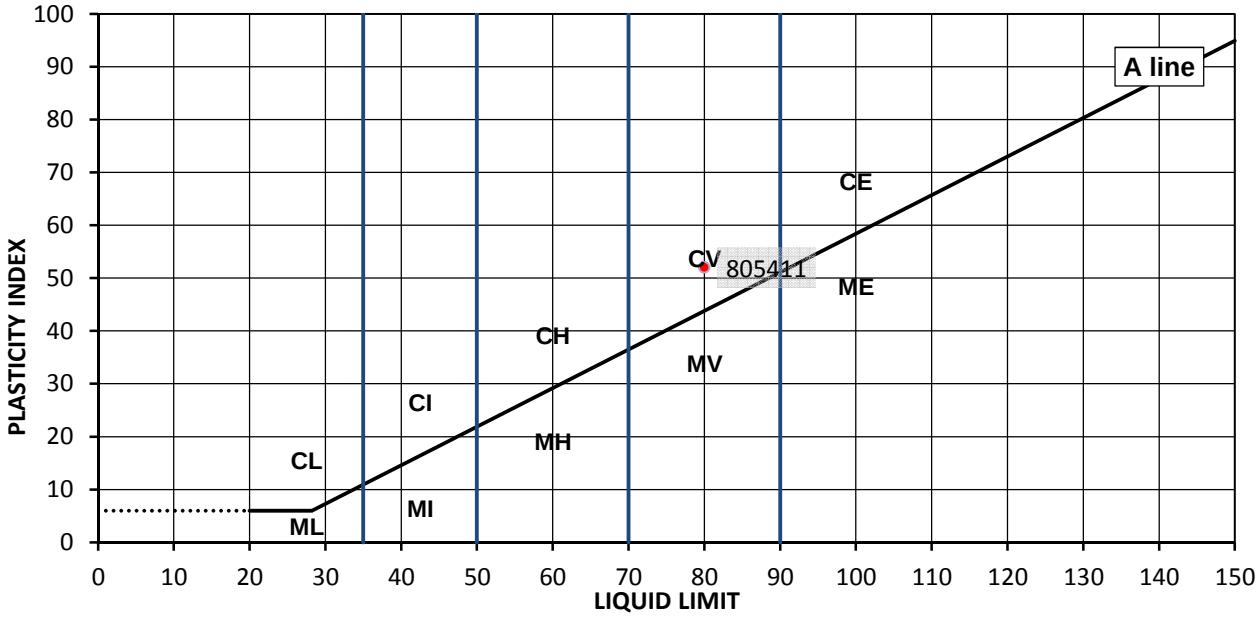
Client:	BWB Consulting Limited	Client Reference:	NTE2366
Client Address:	5th Floor Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	31/08/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site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

TEST RESULTS

Laboratory Reference: 805411
Sample Reference: Not Given

Description:	Mottled brown CLAY	Sample Type:	D
Location:	TP125	Depth Top [m]:	1.00
Sample Preparation:	Tested in natural condition	Depth Base [m]:	1.10

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
30	80	28	52	100



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		Plasticity		Liquid Limit
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M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
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	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

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PL Laboratory Manager Geotechnical Section
Date Reported: 07/09/2017

Signed:

Sushil Sharda
Technical Manager (Geotechnical Division)

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Summary of Classification Test Results

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

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

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

Laboratory Reference	Hole No.	Sample				Soil Description	Density		M/C	Atterberg				PD
		Reference	Top depth [m]	Base depth [m]	Type		bulk Mg/m3	dry Mg/m3	%	% Passing 425um %	LL %	PL %	PI %	Mg/m3
805393	BH106	Not Given	0.50	1.00	B	Brown sandy very gravelly CLAY			22	49	71	31	40	
805394	BH106	Not Given	1.20	2.00	B	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	B	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	B	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

Signed:

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Technical Manager (Geotechnical Division)

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Summary of Classification Test Results

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

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

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

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

Comments:

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Date Reported: 07/09/2017

Signed:

Sushil Sharda
Technical Manager (Geotechnical Division)

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

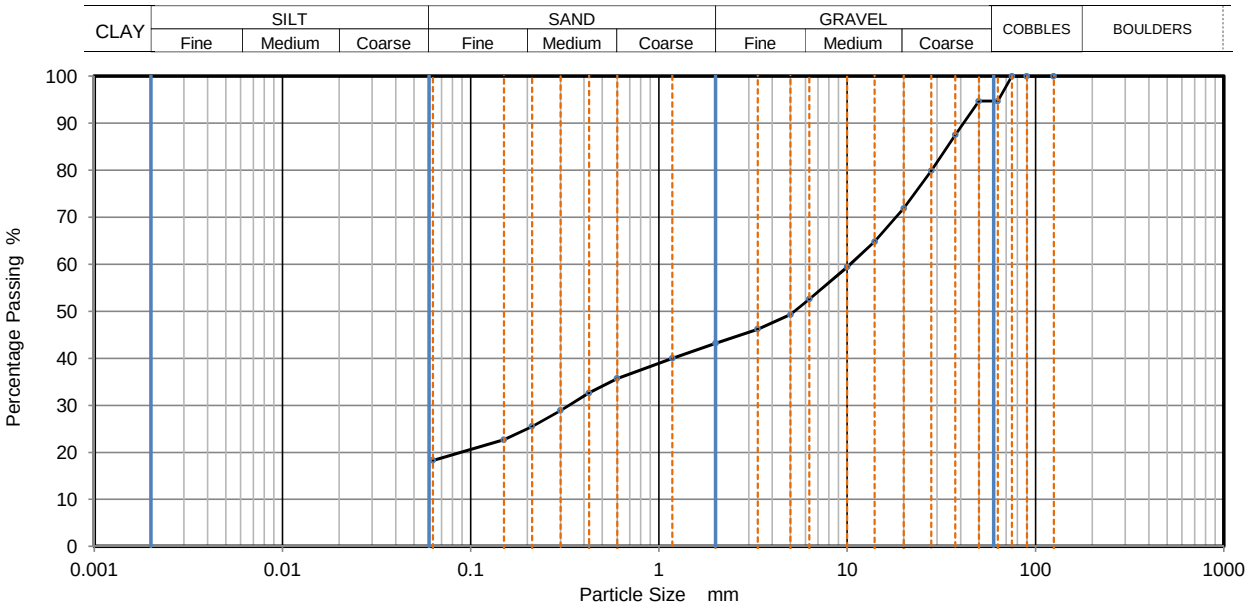
Client:	BWB Consulting Limited	Client Reference:	NTE2366
Client Address:	5th Floor Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	31/08/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site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

TEST RESULTS Laboratory Reference: 805391 Sample Reference: Not Given

Sample description: Mottled brown clayey very sandy GRAVEL with cobbles Sample Type: B

Location: BH101 Depth Top [m]: Not Given

Supplier: Not Given Depth Base [m]: 1.00



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	95		
50	95		
37.5	88		
28	80		
20	72		
14	65		
10	59		
6.3	53		
5	49		
3.35	46		
2	43		
1.18	40		
0.6	36		
0.425	33		
0.3	29		
0.212	26		
0.15	23		
0.063	18		

Dry Mass of sample [g]: 9532

Sample Proportions	% dry mass
Very coarse	5.30
Gravel	51.50
Sand	25.00
Fines <0.063mm	18.30

Grading Analysis		
D100	mm	75
D60	mm	10.4
D30	mm	0.333
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below
The material submitted, fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 07/09/2017

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

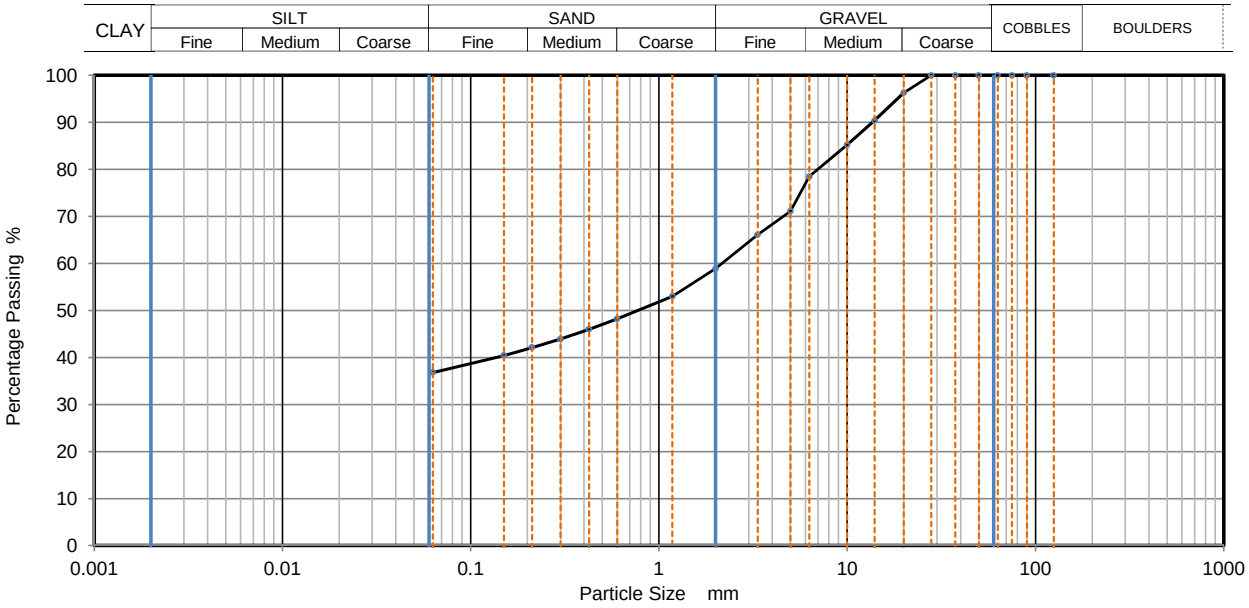
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

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

TEST RESULTS Laboratory Reference: 805392

Sample description:	Brownish grey very clayey very sandy GRAVEL	Sample Reference:	Not Given
Location:	BH103	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	Not Given
		Depth Base [m]:	3.00



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	90		
10	85		
6.3	79		
5	71		
3.35	66		
2	59		
1.18	53		
0.6	48		
0.425	46		
0.3	44		
0.212	42		
0.15	40		
0.063	37		

Dry Mass of sample [g]: 1433

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	41.10
Sand	22.00
Fines <0.063mm	36.80

Grading Analysis		
D100	mm	28
D60	mm	2.17
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 07/09/2017

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

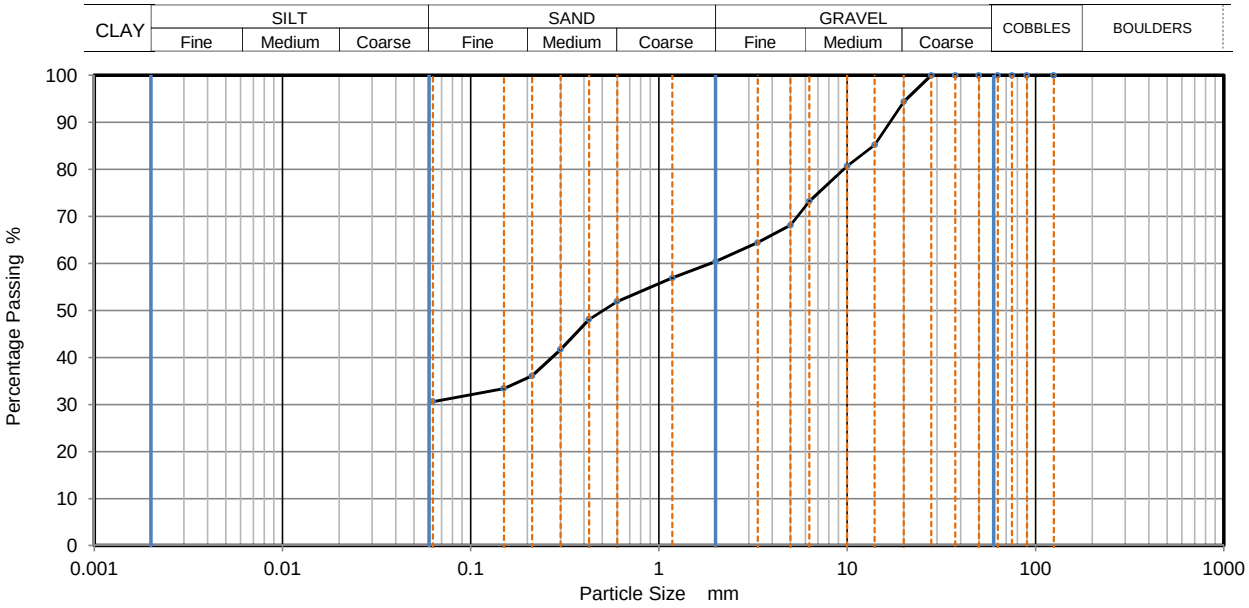
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

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

TEST RESULTS Laboratory Reference: 805393

Sample description:	Brown sandy very gravelly CLAY	Sample Reference:	Not Given
		Sample Type:	B
Location:	BH106	Depth Top [m]:	Not Given
Supplier:	Not Given	Depth Base [m]:	1.00



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	85		
10	81		
6.3	73		
5	68		
3.35	64		
2	60		
1.18	57		
0.6	52		
0.425	48		
0.3	42		
0.212	36		
0.15	33		
0.063	31		

Dry Mass of sample [g]: 643

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	39.60
Sand	29.80
Fines <0.063mm	30.60

Grading Analysis		
D100	mm	28
D60	mm	1.88
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below
The material submitted, fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 07/09/2017

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

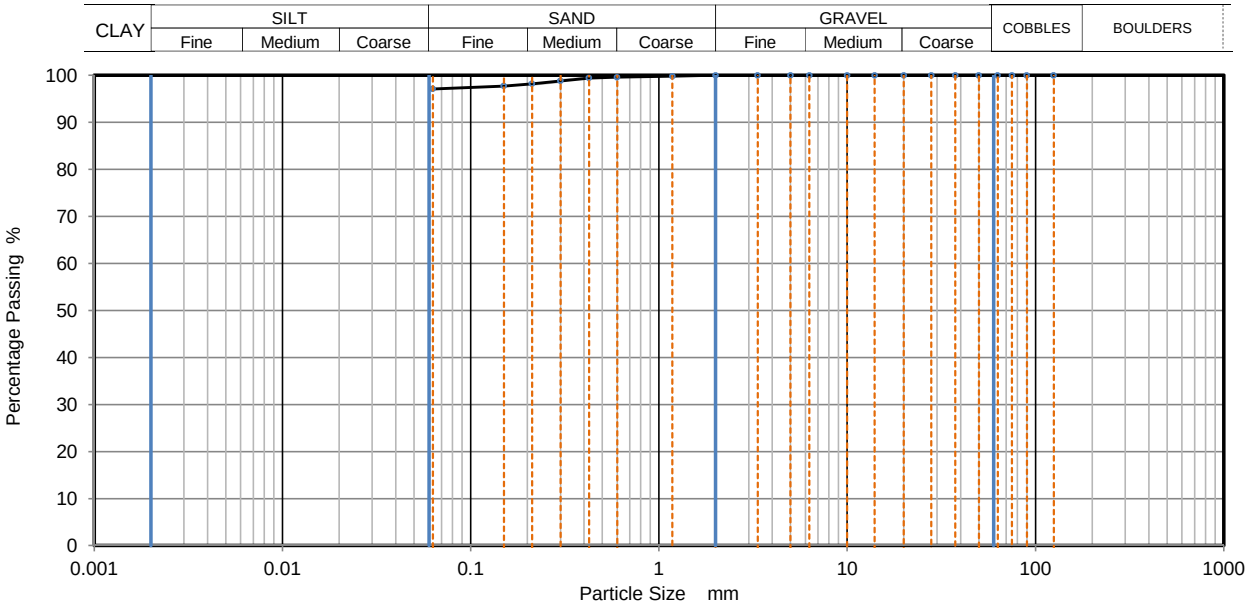
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

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

TEST RESULTS Laboratory Reference: 805397

Sample description:	Dark brown CLAY	Sample Reference:	Not Given
Location:	BH109	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	Not Given
		Depth Base [m]:	1.00



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	99		
0.212	98		
0.15	98		
0.063	97		

Dry Mass of sample [g]: 143

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	2.90
Fines <0.063mm	97.10

Grading Analysis		
D100	mm	3.35
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 07/09/2017

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

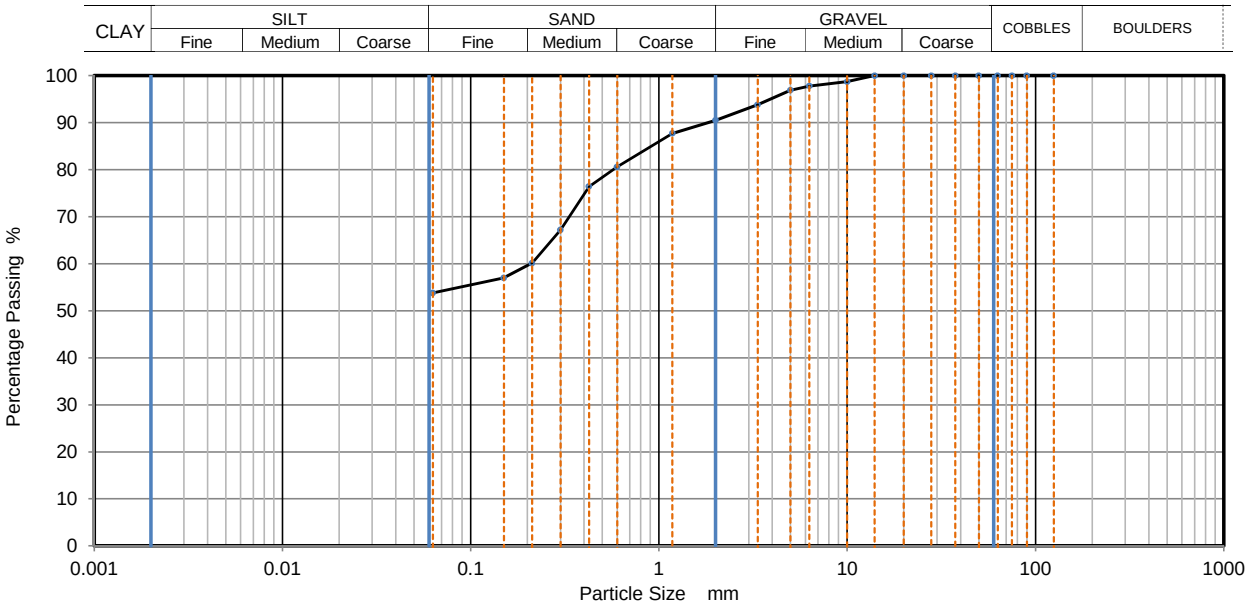
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	BWB Consulting Limited	Client Reference:	NTE2366
Client Address:	5th Floor Waterfront House Nottingham NG2 3DQ	Job Number:	17-58424
		Date Sampled:	Not Given
		Date Received:	17/08/2017
Contact:	Luke Cross	Date Tested:	01/09/2017
Site Name:	Lakeview Drive, Bicester	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 805402 Sample Reference: Not Given

Sample description:	Brown slightly gravelly slightly sandy CLAY with rootlets	Sample Type:	B
Location:	BH112	Depth Top [m]:	Not Given
Supplier:	Not Given	Depth Base [m]:	1.00



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	98		
5	97		
3.35	94		
2	91		
1.18	88		
0.6	81		
0.425	76		
0.3	67		
0.212	60		
0.15	57		
0.063	54		

Dry Mass of sample [g]: 138

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	9.50
Sand	36.70
Fines <0.063mm	53.80

Grading Analysis		
D100	mm	14
D60	mm	0.21
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 07/09/2017

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

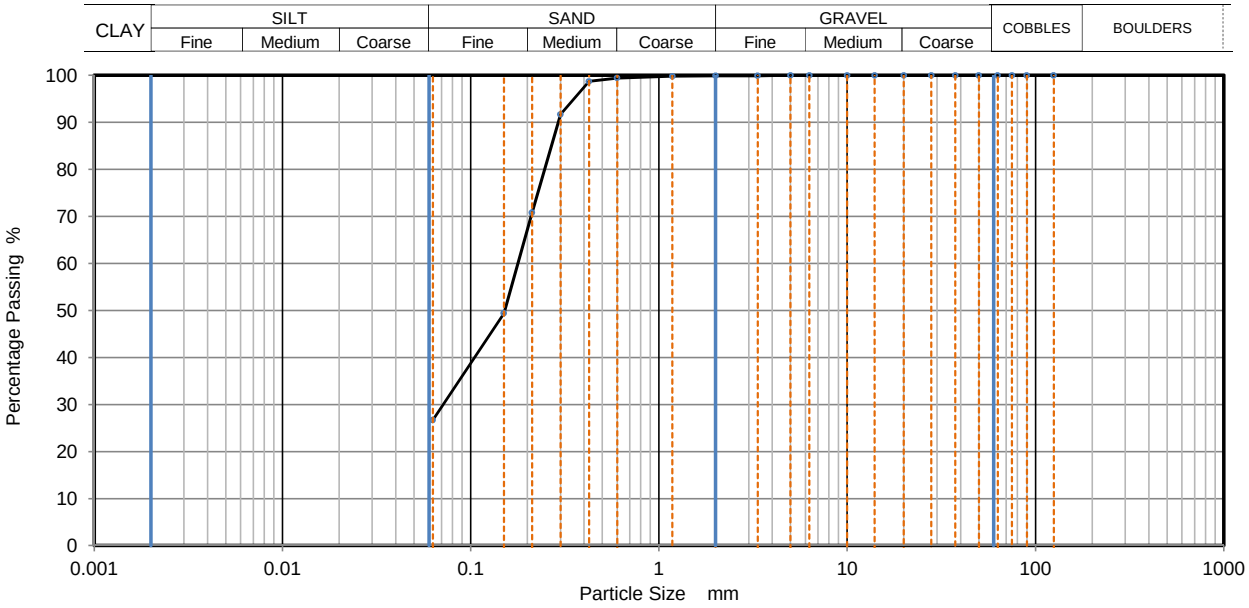
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

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

TEST RESULTS Laboratory Reference: 805404

Sample description:	Brown very clayey SAND	Sample Reference:	Not Given
Location:	TP107	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	Not Given
		Depth Base [m]:	1.50



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	92		
0.212	71		
0.15	49		
0.063	27		

Dry Mass of sample [g]: 240

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.10
Sand	73.20
Fines <0.063mm	26.70

Grading Analysis		
D100	mm	5
D60	mm	0.178
D30	mm	0.0716
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 07/09/2017

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

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

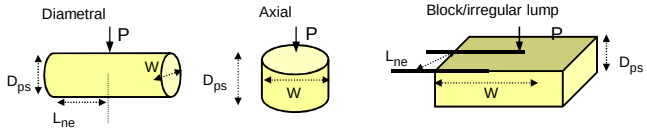
Client: BWB Consulting Limited
Client Address: 5th Floor
Waterfront House
Nottingham
NG2 3DQ
Contact: Luke Cross
Site Name: Lakeview Drive, Bicester
Site Address: Not Given

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 results

Laboratory Reference	Hole No.	Sample				Specimen		Description	Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
		Reference	Depth Top [m]	Depth Base [m]	Type	Reference	Depth [m]			Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
805407	TP121	Not Given	3.20	3.35	B	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	B	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	B	1		Dark brown MUDSTONE	MUDSTONE	I	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	B	2		Dark brown MUDSTONE	MUDSTONE	I	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
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

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

GF 134.4

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
- nickel
- selenium
- benzene
- toluene
- ethylbenzene
- xylene
- 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 produce	Optional	No
Ingestion of soil attached to homegrown produce	Optional	No
Dermal contact with Soil	Yes	Yes
Dermal contact with site derived household dust	Yes	Yes
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.

REFERENCES

Environment Agency, 2009a, Updated Technical Background to the CLEA Model, Science Report SC050021/SR3 ISBN 978-1-84432-856-7

Environment Agency, 2009b, Human health Toxicological Assessment of Contaminants in Soil, Science Report SC050021/SR2 ISBN 978-1-84432-858-1

Environment Agency 2009c, CLEA Software Handbook (version 1.06) Science Report SC050021/SR4, ISBN 978-1-84432-857-4

EIC/AGS/CL:AIRE (2010), Soil Generic Assessment Criteria for Human Health Risk Assessment. Environment Industries Commission (EIC), Association of Geotechnical and Geoenvironmental Specialists (AGS), Contaminated Land: Applications in Real Environments (CL:AIRE). Published by CL:AIRE. ISBN: 978-1-905046-20-1.

Nathanail, C.P., McCaffrey,C., Ashmore,M.H., Cheng, Y.Y., Gillett, A., Ogden,R. & Scott,D. (2009). The LQM/CIEH Generic Assessment Criteria for

Human Health Risk Assessment (2nd Edition). Land Quality Press, Nottingham. ISBN: 0-9547474-7-X.

Nathanail, C.P.; McCaffrey,C.; Gillett, A.G.; Ogden, R.C. & Nathanail, J.F. (2015). The LQM/CIEH Suitable 4 Use Levels. Land Quality Press, Nottingham. ISBN: 978-0-9931084-0-2.

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

ASC exceeds soil saturation limit

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

ASC exceeds soil saturation limit

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

ASC exceeds soil saturation limit

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)	(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	*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

ASC exceeds soil saturation limit

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

ASC exceeds soil saturation limit

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)	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	*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

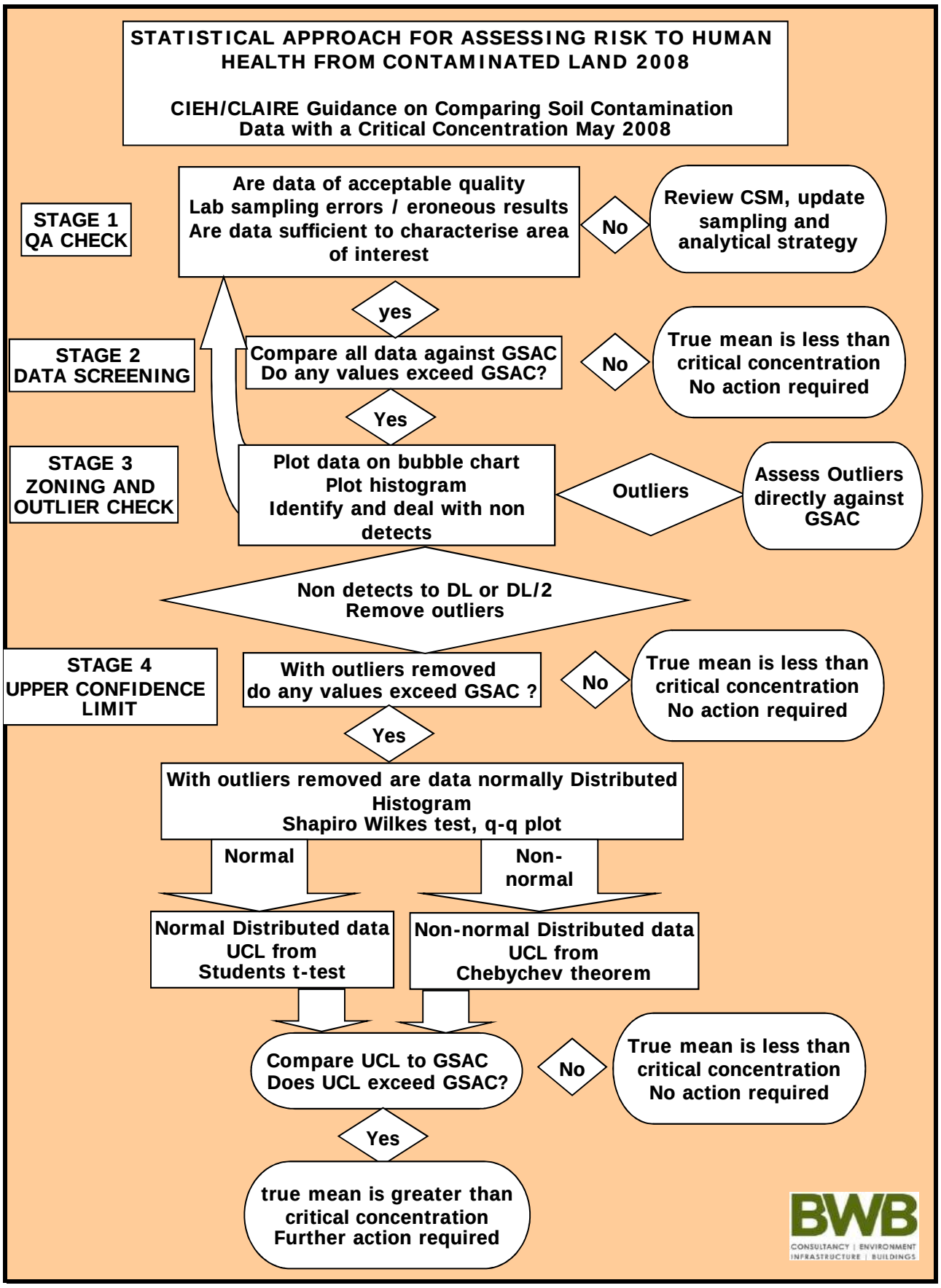
Commercial/Industrial Pathway Specific Assessment Sub Criteria derived May 2015 6% Organic matter	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	Commercial GSAC	Soil Saturation Limit
TPH (>EC12-16) aliphatic	5.20E+05	1.51E+07	9.53E+04	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 6% 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

ASC exceeds soil saturation limit

APPENDIX 11

CLEA FLOW CHART & SCREENING WORKSHEETS


STATISTICAL APPROACH FOR ASSESSING RISK TO HUMAN HEALTH FROM CONTAMINATED LAND 2008
CIEH/CLAIRE Guidance on Comparing Soil Contamination Data with a Critical Concentration May 2008
STAGE 1 QA CHECK
Are data of acceptable quality
Lab sampling errors / eroneous results
Are data sufficient to characterise area of interest
No
Review CSM, update sampling and analytical strategy
yes
STAGE 2 DATA SCREENING
Compare all data against GSAC
Do any values exceed GSAC?
No
True mean is less than critical concentration
No action required
Yes
STAGE 3 ZONING AND OUTLIER CHECK
Plot data on bubble chart
Plot histogram
Identify and deal with non detects
Outliers
Assess Outliers directly against GSAC
Non detects to DL or DL/2
Remove outliers
STAGE 4 UPPER CONFIDENCE LIMIT
With outliers removed
do any values exceed GSAC ?
No
True mean is less than critical concentration
No action required
Yes
With outliers removed are data normally Distributed
Histogram
Shapiro Wilkes test, q-q plot
Normal
Non-normal
Normal Distributed data
UCL from
Students t-test
Non-normal Distributed data
UCL from
Chebychev theorem
Compare UCL to GSAC
Does UCL exceed GSAC?
No
True mean is less than critical concentration
No action required
Yes
true mean is greater than critical concentration
Further action required
BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

Human Health Generic QRA Worksheet

lakeview Drive, Bicester	NTE2366
All samples have been assessed as one averageing area.	

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

Generic Assessment Criteria lakeview Drive, Bicester NTE2366	Commercial mg/kg	Source
Arsenic	6.40E+02	BWB_GSAC
Barium	2.21E+04	BWB_GSAC
Beryllium	1.24E+01	BWB_GSAC
Boron	2.36E+05	BWB_GSAC
Cadmium	2.30E+02	BWB_GSAC
Chromium VI	3.41E+01	BWB_GSAC
Chromium III	9.09E+03	BWB_GSAC
Copper	6.33E+04	BWB_GSAC
Lead*	2.33E+03	DEFRA_C4SL
Inorganic Mercury	3.60E+03	BWB_GSAC
Nickel	1.04E+03	BWB_GSAC
Selenium	1.30E+04	BWB_GSAC
Vanadium	6.63E+03	BWB_GSAC
Zinc	7.33E+05	BWB_GSAC
Cyanide (Free)	4.30E+01	BWB_GSAC
Cyanide (Complex)	2.13E+02	BWB_GSAC
Phenols (Total)	2.65E+04	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 lakeview Drive, Bicester NTE2366	Commercial 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
cis -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 III	Copper	Lead	Inorganic Mercury	Nickel	Selenium	Vanadium	Zinc	Cyanide (Free)	Cyanide (Complex)	Phenols (Total)
Detection 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					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	457678.2	221686.4	66.3	28.0	72	1.1	4.5	0.2	4	32	41	51	0.3	28	1	71	95	1	1	1
TP101	0.40-0.50	457678.2	221686.4	66.3	19.0	49	0.7	3	0.2	4	19	31	23	0.3	19	1	49	48	1	1	1
TP102	0.10-0.20	457715.5	221705.1	66.3	12.0	130	0.43	3.3	0.7	4	21	72	67	0.3	14	1	31	170	1	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	78	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	79	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	7.7	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
TP119	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
TP120	0.60-0.70	458069.5	221668.2	66.4	14.0	50	0.46	0.9	0.2	4	14	25	7.1	0.3	18	1	24	29	1	1	1
TP121	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
Detection 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																				
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																				
TP103	0.20-0.30																				
TP103	0.90-1.00																				
TP105	0.50-0.60																				
TP106	0.10-0.20																				
TP107	0.50-0.60																				
TP114	0.10-0.20																				
TP114	1.00-1.20																				
TP118	0.70-0.80																				
TP119	0.80-0.90																				
TP120	0.60-0.70																				
TP121	0.10-0.20																				
TP125	0.40-0.50																				

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)anthracene	Benzo(g,hi)perylene	Benzo(a)pyrene (as surrogate marker)
Detection 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	1.71E+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	46	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
TP103	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	0.50-0.60	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
TP106	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
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 Specific Assessment Sub Criteria derived May 2015	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion & Dermal Contact	Particulate Dust Inhalation	SGV	Commercial GSAC	Soil Saturation Limit
	(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
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 VI	NR	NR	1.79E+03	3.48E+01		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)					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+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
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	5.30E+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
Total TPH						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
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
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	2.67E+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
		ASC exceeds soil 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 Limit	Guideline Concentration	Source	Number of Samples	Min	Max	TP101	TP101	TP102
									0.200.30	0.400.50	0.100.20
Heavy Metals	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			
	Copper	µg/l	0.7	1	EQS Freshwater	3	22.00	42.00	23.00	22.00	42.00
	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
	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
	pH					3	7.90	8.20	7.90	8.00	8.20
Inorganics	Cyanide (total)	µg/l	10	1	EQS Freshwater	3	10.00	10.00	10.00	10.00	10.00
	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
Heavy Metals	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
	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**
	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
	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
	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
	pH					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**
Inorganics	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**
	Phenol*	µg/l	10	7.7	EQS Freshwater	10	0.00	0.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Petroleum Hydrocarbons	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										
	Aliphatic C8-C10	µg/l		10	UK DWS	0	0.00	0.00										
	Aliphatic C10-C12	µg/l		10	UK DWS	0	0.00	0.00										
	Aliphatic C12-C16	µg/l		10	UK DWS	0	0.00	0.00										
	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										
	Aromatic EC5-EC7	µg/l		10	EQS Freshwater	0	0.00	0.00										
	Aromatic EC7-EC8	µg/l		74	EQS Freshwater	0	0.00	0.00										
	Aromatic EC8-EC10	µg/l		10	UK DWS	0	0.00	0.00										
	Aromatic EC10-EC12	µg/l		10	UK DWS	0	0.00	0.00										
	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
Polycyclic Aromatic Hydrocarbons	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
	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
	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
	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**
	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
	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
	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
	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
	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
	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**
	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
	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
	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
	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

C4X7F-SLYYU-9M8XV

Job name

NTE2366 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

Classification of sample: TP101

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

Sample details

Sample Name:
TP101
Sample Depth:
0.20-0.30 m
Moisture content:
16%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

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	MC Applied	Conc. Not Used
1		confirm TPH has NOT arisen from diesel or petrol					☑							
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		28	mg/kg	1.32	36.969	mg/kg	0.0037 %		
3		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/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		4.5	mg/kg	13.43	60.435	mg/kg	0.00604 %		
5		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
6		chromium { chromium(III) oxide }		215-160-9	1308-38-9		32	mg/kg	1.462	46.77	mg/kg	0.00468 %		
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		41	mg/kg	1.126	46.161	mg/kg	0.00462 %		
8		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		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**
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 the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
12		zinc { zinc chromate }	024-007-00-3				95	mg/kg	2.774	263.544	mg/kg	0.0264 %		
13		pH			PH		7.8	pH		7.8	pH	7.8 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				48	mg/kg		48	mg/kg	0.0048 %		
				TPH									
16		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
18		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
19		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		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]									
20		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
22		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**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	50-32-8									
25		benzo[b]fluoranthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
27		benzo[k]fluoranthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-036-00-5	205-916-6	207-08-9									
28		chrysene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
		601-048-00-0	205-923-4	218-01-9									
29		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		fluoranthene				0.24	mg/kg		0.24	mg/kg	0.000024 %		
			205-912-4	206-44-0									
31		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
32		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
33		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
34		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
35		pyrene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			204-927-3	129-00-0									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0612 %		

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 concentration
<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.

Classification of sample: TP101[1]

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

Sample details

Sample Name:
TP101[1]
Sample Depth:
0.40-0.50 m
Moisture content:
10%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑							
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19	mg/kg	1.32	25.086	mg/kg	0.00251 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7	mg/kg	2.775	1.943	mg/kg	0.000194 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		3	mg/kg	13.43	40.29	mg/kg	0.00403 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		19	mg/kg	1.462	27.77	mg/kg	0.00278 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		31	mg/kg	1.126	34.903	mg/kg	0.00349 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	23	mg/kg	1.56	35.876	mg/kg	0.0023 %		
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
10	nickel { nickel dihydroxide }	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	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
12	zinc { zinc chromate }	024-007-00-3				48	mg/kg	2.774	133.159	mg/kg	0.0133 %		
13	pH			PH		8	pH		8	pH	8pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				27	mg/kg		27	mg/kg	0.0027 %		
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**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
	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 concentration
<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.

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%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

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

Hazard Statements hit:

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)

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		confirm TPH has NOT arisen from diesel or petrol		☑					
2		arsenic { arsenic trioxide }		12 mg/kg	1.32	15.844 mg/kg	0.00158 %		
		033-003-00-0 / 215-481-4 / 1327-53-3							
3		beryllium { beryllium oxide }		0.43 mg/kg	2.775	1.193 mg/kg	0.000119 %		
		004-003-00-8 / 215-133-1 / 1304-56-9							
4		boron { boron tribromide/trichloride/trifluoride (combined) }		3.3 mg/kg	13.43	44.319 mg/kg	0.00443 %		
		/ / 10294-33-4, 10294-34-5, 7637-07-2							
5		cadmium { cadmium sulfide }	1	0.7 mg/kg	1.285	0.9 mg/kg	0.00007 %		
		048-010-00-4 / 215-147-8 / 1306-23-6							
6		chromium { chromium(III) oxide }		21 mg/kg	1.462	30.693 mg/kg	0.00307 %		
		/ 215-160-9 / 1308-38-9							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
7		copper { dicopper oxide; copper (I) oxide }				72	mg/kg	1.126	81.064	mg/kg	0.00811 %		
		029-002-00-X	215-270-7	1317-39-1									
8		lead { lead chromate }			1	67	mg/kg	1.56	104.508	mg/kg	0.0067 %		
		082-004-00-2	231-846-0	7758-97-6									
9		mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
10		nickel { nickel dihydroxide }				14	mg/kg	1.579	22.113	mg/kg	0.00221 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
11		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
		034-002-00-8											
12		zinc { zinc chromate }				170	mg/kg	2.774	471.605	mg/kg	0.0472 %		
		024-007-00-3											
13		pH				9.7	pH		9.7	pH	9.7 pH		
				PH									
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
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				1000	mg/kg		1000	mg/kg	0.1 %		
				TPH									
16		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
19		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		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]									
20		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		anthracene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			204-371-1	120-12-7									
23		benzo[a]anthracene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
		601-033-00-9	200-280-6	56-55-3									
24		benzo[a]pyrene; benzo[def]chrysene				2.4	mg/kg		2.4	mg/kg	0.00024 %		
		601-032-00-3	200-028-5	50-32-8									
25		benzo[b]fluoranthene				2	mg/kg		2	mg/kg	0.0002 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[ghi]perylene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
			205-883-8	191-24-2									
27		benzo[k]fluoranthene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
		601-036-00-5	205-916-6	207-08-9									
28		chrysene				1.6	mg/kg		1.6	mg/kg	0.00016 %		
		601-048-00-0	205-923-4	218-01-9									
29		dibenz[a,h]anthracene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
		601-041-00-2	200-181-8	53-70-3									
30		fluoranthene				2.2	mg/kg		2.2	mg/kg	0.00022 %		
			205-912-4	206-44-0									
31		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
32		indeno[123-cd]pyrene				1.5	mg/kg		1.5	mg/kg	0.00015 %		
			205-893-2	193-39-5									

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

Key

	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)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<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.

Classification of sample: TP102[1]

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

Sample details

Sample Name:
TP102[1]
Sample Depth:
0.40-0.50 m
Moisture content:
12%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		confirm TPH has NOT arisen from diesel or petrol					☑							
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		20	mg/kg	1.32	26.407	mg/kg	0.00264 %		
3		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.61	mg/kg	2.775	1.693	mg/kg	0.000169 %		
4		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2.3	mg/kg	13.43	30.889	mg/kg	0.00309 %		
5		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
6		chromium { chromium(III) oxide }		215-160-9	1308-38-9		21	mg/kg	1.462	30.693	mg/kg	0.00307 %		
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		35	mg/kg	1.126	39.406	mg/kg	0.00394 %		
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	40	mg/kg	1.56	62.393	mg/kg	0.004 %		
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**
10		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		18	mg/kg	1.579	28.431	mg/kg	0.00284 %		
11		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
12		zinc { zinc chromate }	024-007-00-3				78	mg/kg	2.774	216.383	mg/kg	0.0216 %		
13		pH			PH		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	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	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
15		TPH (C6 to C40) petroleum group			TPH		61	mg/kg		61	mg/kg	0.0061 %		
16		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
17		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
18		anthracene		204-371-1	120-12-7		0.19	mg/kg		0.19	mg/kg	0.000019 %		
19		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.82	mg/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	mg/kg		1.2	mg/kg	0.00012 %		
21		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.2	mg/kg		1.2	mg/kg	0.00012 %		
22		benzo[ghi]perylene		205-883-8	191-24-2		0.86	mg/kg		0.86	mg/kg	0.000086 %		
23		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.59	mg/kg		0.59	mg/kg	0.000059 %		
24		chrysene	601-048-00-0	205-923-4	218-01-9		0.96	mg/kg		0.96	mg/kg	0.000096 %		
25		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.14	mg/kg		0.14	mg/kg	0.000014 %		
26		fluoranthene		205-912-4	206-44-0		1.2	mg/kg		1.2	mg/kg	0.00012 %		
27		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		indeno[123-cd]pyrene		205-893-2	193-39-5		0.63	mg/kg		0.63	mg/kg	0.000063 %		
29		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		phenanthrene		201-581-5	85-01-8		0.39	mg/kg		0.39	mg/kg	0.000039 %		
31		pyrene		204-927-3	129-00-0		1.1	mg/kg		1.1	mg/kg	0.00011 %		
32		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
											Total:	0.049 %		

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 concentration
<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.

Classification of sample: TP103

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

Sample details

Sample Name:
TP103
Sample Depth:
0.20-0.30 m
Moisture content:
11%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	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	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	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		22 mg/kg	1.462	32.154 mg/kg	0.00322 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		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	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**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		23 mg/kg	1.579	36.328 mg/kg	0.00363 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
12	zinc { zinc chromate }	024-007-00-3				79 mg/kg	2.774	219.158 mg/kg	0.0219 %		
13	pH			PH		8.1 pH		8.1 pH	8.1 pH		

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
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
		006-007-00-5							
15		TPH (C6 to C40) petroleum group		46 mg/kg		46 mg/kg	0.0046 %		
		TPH							
16		acenaphthene		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6 / 83-32-9							
17		acenaphthylene		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1 / 208-96-8							
18		anthracene		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		204-371-1 / 120-12-7							
19		benzo[a]anthracene		0.42 mg/kg		0.42 mg/kg	0.000042 %		
		601-033-00-9 / 200-280-6 / 56-55-3							
20		benzo[a]pyrene; benzo[def]chrysene		0.55 mg/kg		0.55 mg/kg	0.000055 %		
		601-032-00-3 / 200-028-5 / 50-32-8							
21		benzo[b]fluoranthene		0.43 mg/kg		0.43 mg/kg	0.000043 %		
		601-034-00-4 / 205-911-9 / 205-99-2							
22		benzo[ghi]perylene		0.39 mg/kg		0.39 mg/kg	0.000039 %		
		205-883-8 / 191-24-2							
23		benzo[k]fluoranthene		0.41 mg/kg		0.41 mg/kg	0.000041 %		
		601-036-00-5 / 205-916-6 / 207-08-9							
24		chrysene		0.45 mg/kg		0.45 mg/kg	0.000045 %		
		601-048-00-0 / 205-923-4 / 218-01-9							
25		dibenz[a,h]anthracene		0.09 mg/kg		0.09 mg/kg	0.000009 %		
		601-041-00-2 / 200-181-8 / 53-70-3							
26		fluoranthene		0.67 mg/kg		0.67 mg/kg	0.000067 %		
		205-912-4 / 206-44-0							
27		fluorene		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5 / 86-73-7							
28		indeno[123-cd]pyrene		0.3 mg/kg		0.3 mg/kg	0.00003 %		
		205-893-2 / 193-39-5							
29		naphthalene		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		601-052-00-2 / 202-049-5 / 91-20-3							
30		phenanthrene		0.19 mg/kg		0.19 mg/kg	0.000019 %		
		201-581-5 / 85-01-8							
31		pyrene		0.6 mg/kg		0.6 mg/kg	0.00006 %		
		204-927-3 / 129-00-0							
32		phenol		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
		604-001-00-2 / 203-632-7 / 108-95-2							
						Total:	0.0469 %		

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 concentration
<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.

Classification of sample: TP103[1]

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

Sample details

Sample Name:
TP103[1]
Sample Depth:
0.90-1.00 m
Moisture content:
18%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19 mg/kg	1.32	25.086 mg/kg	0.00251 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.85 mg/kg	2.775	2.359 mg/kg	0.000236 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2.9 mg/kg	13.43	38.947 mg/kg	0.00389 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		23 mg/kg	1.462	33.616 mg/kg	0.00336 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		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	16 mg/kg	1.56	24.957 mg/kg	0.0016 %		
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**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16 mg/kg	1.579	25.272 mg/kg	0.00253 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
12	zinc { zinc chromate }	024-007-00-3				36 mg/kg	2.774	99.869 mg/kg	0.00999 %		
13	pH			PH		7.9 pH		7.9 pH	7.9 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				19	mg/kg		19	mg/kg	0.0019 %		
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0295 %		

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 concentration
<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.

Classification of sample: TP105

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

Sample details

Sample Name:
TP105
Sample Depth:
0.50-0.60 m
Moisture content:
41%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	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	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 { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.4 mg/kg	1.285	0.514 mg/kg	0.00004 %		
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		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**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		20 mg/kg	1.579	31.59 mg/kg	0.00316 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				4.8 mg/kg	2.554	12.257 mg/kg	0.00123 %		
12	zinc { zinc chromate }	024-007-00-3				21 mg/kg	2.774	58.257 mg/kg	0.00583 %		
13	pH			PH		7.4 pH		7.4 pH	7.4 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										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 concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP106

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

Sample details

Sample Name:
TP106
Sample Depth:
0.10-0.20 m
Moisture content:
28%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	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	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	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		21 mg/kg	1.462	30.693 mg/kg	0.00307 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		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	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**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		15 mg/kg	1.579	23.692 mg/kg	0.00237 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
12	zinc { zinc chromate }	024-007-00-3				52 mg/kg	2.774	144.256 mg/kg	0.0144 %		
13	pH			PH		7.6 pH		7.6 pH	7.6 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										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 concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP107

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

Sample details

Sample Name:
TP107
Sample Depth:
0.50-0.60 m
Moisture content:
12%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		confirm TPH has NOT arisen from diesel or petrol					☑							
2		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		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		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
6		chromium { chromium(III) oxide }		215-160-9	1308-38-9		11	mg/kg	1.462	16.077	mg/kg	0.00161 %		
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		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		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**
10		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 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 elsewhere in this Annex }	034-002-00-8				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
12		zinc { zinc chromate }	024-007-00-3				25	mg/kg	2.774	69.354	mg/kg	0.00694 %		
13		pH			PH		8.1	pH		8.1	pH	8.1 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										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 concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP114

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

Sample details

Sample Name:
TP114
Sample Depth:
0.10-0.20 m
Moisture content:
18%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	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	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) }			10294-33-4, 10294-34-5, 7637-07-2		4.3 mg/kg	13.43	57.749 mg/kg	0.00577 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		29 mg/kg	1.462	42.385 mg/kg	0.00424 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		41 mg/kg	1.126	46.161 mg/kg	0.00462 %		
8	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	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
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		20 mg/kg	1.579	31.59 mg/kg	0.00316 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
12	zinc { zinc chromate }	024-007-00-3				100 mg/kg	2.774	277.415 mg/kg	0.0277 %		
13	pH			PH		7.7 pH		7.7 pH	7.7 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				47	mg/kg		47	mg/kg	0.0047 %		
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0564 %		

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 concentration
<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.

Classification of sample: TP114[1]

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

Sample details

Sample Name:
TP114[1]
Sample Depth:
1.00-1.20 m
Moisture content:
13%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

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 data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.2 mg/kg	1.32	12.147 mg/kg	0.00121 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.2 mg/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 mg/kg	13.43	2.686 mg/kg	0.000269 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		8.2 mg/kg	1.462	11.985 mg/kg	0.0012 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		19 mg/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 mg/kg	1.56	7.331 mg/kg	0.00047 %		
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**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		12 mg/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 }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
12	zinc { zinc chromate }	024-007-00-3				23 mg/kg	2.774	63.805 mg/kg	0.00638 %		
13	pH			PH		8.2 pH		8.2 pH	8.2 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										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 concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP118

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

Sample details

Sample Name:
TP118
Sample Depth:
0.70-0.80 m
Moisture content:
16%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

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	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	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	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	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		22 mg/kg	1.462	32.154 mg/kg	0.00322 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		27 mg/kg	1.126	30.399 mg/kg	0.00304 %		
8	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	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**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 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 elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
12	zinc { zinc chromate }	024-007-00-3				32 mg/kg	2.774	88.773 mg/kg	0.00888 %		
13	pH			PH		7.3 pH		7.3 pH	7.3 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0236 %		

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 concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP119

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

Sample details

Sample Name:
TP119
Sample Depth:
0.80-0.90 m
Moisture content:
13%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

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 data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		3.7 mg/kg	1.32	4.885 mg/kg	0.000489 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.68 mg/kg	2.775	1.887 mg/kg	0.000189 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.8 mg/kg	13.43	24.174 mg/kg	0.00242 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		23 mg/kg	1.462	33.616 mg/kg	0.00336 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		28 mg/kg	1.126	31.525 mg/kg	0.00315 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
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**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		12 mg/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 }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
12	zinc { zinc chromate }	024-007-00-3				26 mg/kg	2.774	72.128 mg/kg	0.00721 %		
13	pH			PH		7.9 pH		7.9 pH	7.9 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0215 %		

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 concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP120

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

Sample details

Sample Name:
TP120
Sample Depth:
0.60-0.70 m
Moisture content:
5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	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	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	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		14 mg/kg	1.462	20.462 mg/kg	0.00205 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		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**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		18 mg/kg	1.579	28.431 mg/kg	0.00284 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
12	zinc { zinc chromate }	024-007-00-3				29 mg/kg	2.774	80.45 mg/kg	0.00805 %		
13	pH			PH		8.2 pH		8.2 pH	8.2 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				19	mg/kg		19	mg/kg	0.0019 %		
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0222 %		

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 concentration
<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.

Classification of sample: TP121

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

Sample details

Sample Name:
TP121
Sample Depth:
0.10-0.20 m
Moisture content:
15%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.4 mg/kg	1.32	12.411 mg/kg	0.00124 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.84 mg/kg	2.775	2.331 mg/kg	0.000233 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		5.6 mg/kg	13.43	75.208 mg/kg	0.00752 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		28 mg/kg	1.462	40.924 mg/kg	0.00409 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		42 mg/kg	1.126	47.287 mg/kg	0.00473 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	39 mg/kg	1.56	60.833 mg/kg	0.0039 %		
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**
10	nickel { nickel dihydroxide }	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	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
12	zinc { zinc chromate }	024-007-00-3				78 mg/kg	2.774	216.383 mg/kg	0.0216 %		
13	pH			PH		7 pH		7 pH	7pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.048 %		

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 concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP125

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

Sample details

Sample Name:
TP125
Sample Depth:
0.40-0.50 m
Moisture content:
12%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	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	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		2.2 mg/kg	13.43	29.546 mg/kg	0.00295 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		26 mg/kg	1.126	29.273 mg/kg	0.00293 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	14 mg/kg	1.56	21.837 mg/kg	0.0014 %		
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**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		50 mg/kg	1.579	78.975 mg/kg	0.0079 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
12	zinc { zinc chromate }	024-007-00-3				86 mg/kg	2.774	238.577 mg/kg	0.0239 %		
13	pH			PH		7.9 pH		7.9 pH	7.9 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
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**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.047 %		

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 concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

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

- **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

- **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

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

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)

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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