ARCADIS Design & Consultancy for natural and built assets

GEO-ENVIRONMENTAL PHASE 2 SITE INVESTIGATION

Land at Pioneer Park

Exploration Drive, Leicester

FEBRUARY 2018

Incorporating

EC HARRIS BUILT ASSET CONSULTANCY

Hyder

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Geo-Environmental Phase 2 Site Investigation

Land at Pioneer Park

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1 Introduction

Arcadis was commissioned by Leicester City Council (LCC) to complete a “Phase 2” geo-environmental site investigation for land off Exploration Drive, Leicester within Pioneer Park. LCC intend to acquire the site with a view to it be developed as a future employment site, in line with the LCC Economic Action Plan and the Pioneer Park masterplan.

A site location plan is presented within Appendix A.

1.1 Previous Reports

Arcadis have undertaken the following previous reports in relation to the site:

- Geo-Environmental Phase 1 Desk Study, Land at Pioneer Park. Ref. 1001675001. Dated January 2018

This report should be read in conjunction with the desk study report as the information presented provides the basis for the conceptual understanding of the site.

1.2 Aims & Objectives

The overall aim of the previous phase 1 and this phase 2 site assessment was to provide LCC with an understanding of the ground related potential issues associated with the site and understanding of implications to potential development prior to site acquisition.

The objectives of the phase 2 site investigation were to:

- assess the environmental condition of the site in line with UK regulatory guidance, developing upon the phase 1 conceptual site model (CSM);
- Assess potential environmental or geotechnical constraints which could affect the proposed development; and
- Provide recommendations (including associated high-level cost estimates) to conduct further assessment and/or address constraints as part of the proposed development.

1.3 Proposed Redevelopment

It is understood that should LCC acquire the site the plan is for the site to be developed for light commercial / office use comprising two storey buildings. At the time of writing, LCC provided Arcadis with a section from the DOCK 3 Feasibility Summary report. Within this, document, several design options were presented for the proposed development at the site. Arcadis were advised that the preferred design option was “Scenario 02B – 5 Blocks” as shown below. More detailed plans are provided in Appendix B.

Proposed Development: Scenario 02B – 5 Blocks

Indicative plan removed - feasibility study use only. Not for the purposes of design.

1.4 Scope of Works

To achieve the objectives the following scope of work was defined:

- Undertake utility avoidance works prior to breaking ground;
- Undertake 6no. window sample boreholes up to 5m depth (including *in situ* testing and installation of gas and groundwater monitoring wells);
- Undertake 13no. machine excavated trial pits up to 3.5m depth;
- Laboratory testing (chemical and geotechnical);
- Single round of groundwater and ground gas monitoring; and
- Factual and interpretative geo-environmental report.

1.5 Reliability of Information / Limitations

Arcadis warrants that the services performed were conducted in a competent and professional manner in accordance with sound consulting practices and procedures.

Arcadis cannot warrant the actual property conditions described in this report beyond matters amenable to confirmation within the limits of this report. It should be noted that ground conditions between exploratory holes may vary from those identified during this ground investigation; any design should take this into consideration. It should also be noted that groundwater levels may be subject to diurnal, tidal, seasonal, climatic variations and those recorded in this report are solely dependent on the time the ground investigation was carried out and the weather before and during the investigation.

The reader is referred to the Study Limitations, presented in Appendix C.

2 Site Setting

2.1 Site Location

Item	Details
Site Status	Unused brownfield land
Intended end use	Commercial development
OS National Grid Coordinates	158550, 306500
Elevation	Approximately 55m above ordnance datum (AOD)
Site Size	Approximately 1.17ha

2.2 Investigation Rationale

Based on the findings of the Phase 1 desk study and in the context of the proposed redevelopment, the Phase 2 site investigation was designed in order to develop the understanding of the CSM and potential geo-environmental constraints. The key potential environmental and geotechnical constraints and contaminants identified following the Phase 1 were associated with:

- Historical landfill and made ground material (may include sewage sludge);
- Above ground storage tank (AST) and underground storage tank (UST) of unknown contents, located both on site and adjacent to site;
- Historical vehicle testing centre;
- Potential presence of free phase hydrocarbon;
- Piles may be required if a substantial thickness of made ground or Alluvium is encountered;
- Ground improvement or deepened foundations may be required due to settlement of made ground/Alluvium;
- Potential for historical relict structures which would require breaking up and grubbing out; and
- Ground gases generated within the made ground and/or Alluvium.

The intrusive locations were positioned in order to target these areas of concern. An exploratory hole location plan is shown below and presented in Appendix A.

Exploratory Hole Location Plan

3 Site Investigation Findings

3.1 Methodologies

The site investigation methodologies and details of the laboratory testing are presented in Appendix D.

3.2 Ground Conditions

Full details of the ground conditions encountered are included in the exploratory hole logs presented as Appendix E and are summarised below. General photographs of the recovered soils are presented in Appendix F.

Made Ground

Made Ground was encountered in all exploratory locations across site comprising a mix of granular and cohesive units (ranging from sandy gravelly clay, clayey gravelly sand to clayey sandy gravel). The made ground is typical of demolition waste which included rebar, roof tiles, brick, concrete and granite. Cobbles were common across site comprising brick, granite and concrete, in addition, TP111 encountered boulders (300mm) of granite.

TP109 encountered a concrete obstruction at 0.8m depth which is assumed to be an historic foundation related to previous filter beds associated with the former sewage works (of note, no other foundations were encountered in the locations targeting the previous bakery and vehicle testing centre (TP101, TP102, TP104, TP105, TP110 and TP111)).

In general, the depth of made ground varied between 0.90m to 2.70m, however, the base of the made ground was not proven in TP112 (the trial pit terminated in made ground at 4.2m)

Window sample locations WS106, WS106a and WS106b all refused on obstructions (likely to be compacted cobbles within the made ground material) at between approximately 1.5m and 1.6m below ground level (bgl). Trial pits TP109 and TP110 which were located in the same area encountered made ground to between 1.70m and 1.90m bgl which included much demolition rubble including cobbles of granite and rebar material.

Superficial Deposits

Alluvium

Exploratory holes TP111, TP113, WS104 and WS105 (located in the east of site) encountered soft and soft to firm friable clays and silts which are considered to represent Alluvium.

River Terrace Deposits

The majority of exploratory holes (excluding TP112, WS106, WS106a and WS106b) encountered River Terrace Deposits which generally comprised gravelly sand, however, also included sand, silty sand, sandy gravelly clay, sandy clay, and sandy gravel.

The results of the standard penetration tests (SPT) undertaken in the window sample boreholes indicate that the granular portion comprised medium dense to dense material which became very dense at approximately 4.0m bgl (however, WS101 refused in these deposits at 2.4m bgl).

The River Terrace deposits were encountered to a maximum depth of 4.40m bgl.

Bedrock

Bedrock was not encountered.

3.3 On-Site Environmental Screening, Visual and Olfactory Observations

The photo ionisation detector (PID) was used to screen the soils at regular (typically <1m) intervals. No elevated readings were recorded.

A slight “chemical” type odour was noted in the made ground material in WS103 at 0.60m bgl. A “rotten/sulphur” type odour was noted in TP112 at 2.10m bgl (the material which is potentially made ground).

Black staining (with no odour) was noted in made ground soils in TP101 at 0.20-0.90m bgl and TP102 at 0.30-0.50m bgl

3.4 Groundwater

Details of groundwater strikes are presented on the relevant exploratory hole log. A summary of strikes and resting levels (measured during the groundwater monitoring visit undertaken on 5 February 2018) are presented in the table below.

Location	Groundwater Strike (m bgl)	Groundwater Rest Level (m bgl)	Comments
WS101	1.9	n/a	No obvious strike, natural ground slightly saturated from 1.9m bgl.
WS103	2.7	n/a	No obvious strike, natural ground slightly saturated from 2.7m bgl.
WS104	n/a	3.76	No strike noted during drilling, water resting at 3.76m during monitoring. Well purged dry with minimal recharge noted, assumed perched groundwater from made ground resting at base of monitoring well.
WS105	1.8	n/a	No obvious strike, natural ground slightly saturated from 1.8m bgl.
TP104	1.6	n/a	Seepage noted within natural ground from 1.6m bgl.
TP112	1.4 2.1	n/a	Two separate seepages within made ground noted.

Non-aqueous phase liquid (NAPL) was not observed and no olfactory evidence was noted in the monitoring wells.

3.5 Laboratory Analysis Results

The results of the analysis of the soil obtained during the investigation are presented in Appendices G and H.

3.6 Ground Gas Monitoring

All wells were monitored for permanent ground gas and the results of the monitoring are presented as Appendix I.

4 Contamination Assessment

The following subsections describe the risk assessment that has been undertaken to assess the concentrations of CoC and discuss the potential implications these have on the proposed redevelopment. The interpretation has been based on the findings of the desk study and preliminary site investigation data.

4.1 Comparison to Generic Assessment Criteria

In line with CLR11 (DEFRA & EA, 2004), a Generic Quantitative Risk Assessment (GQRA) has been undertaken to determine the significance of the concentrations measured through chemical analysis.

The GQRA comprises the comparison of the measured concentrations with Arcadis in-house Generic Assessment Criteria (GACs) for the protection of human health and water resource receptors associated with the site.

The Alluvium and River Terrace Deposits have been classified as Secondary A Aquifers (it is worth noting that the Alluvial deposits encountered were cohesive and as such, unlikely to be used as a water resource). The bedrock has been classified as a Secondary B Aquifer. Therefore, concentrations of CoC have been compared with the Aquifer GAC. The nearest watercourse is the River Soar, located 125m to the east. It is considered that this watercourse is sufficiently distant from the site and therefore has been discounted as a potential receptor.

The proposed end-use for the Site is for commercial end use which includes pavements, car park, access roads and limited soft landscaping areas. As such, the commercial end use GAC has been selected.

The derivation of the GAC is presented in Appendix J and the GAC are presented in Appendix K.

4.1.1 Human Health Risk Assessment – Soil

There were no human health exceedances in relation to the applicable GAC protective of human health receptors.

4.1.2 Human Health Risk Assessment – Groundwater

There were no exceedances of the GAC protective of human health receptors from the groundwater sample.

4.1.3 Water Resource Risk Assessment – Soil

The table below shows the comparison of soil concentrations to the GAC protective of the water resource receptors associated with the site:

Receptor	Location	Depth (m bgl)	Contaminant exceeding GAC
Secondary A / B Aquifer	TP102	0.30	Various PAH
	TP104	0.30	
	TP105	0.10	
	TP107	0.50	
	TP108	0.60	
	TP109	0.50	
	TP111	0.30	
	TP112	2.10	
	WS101	0.30-0.40	
	WS106	0.45-0.60	

It should be noted that there are no GAC derived for the protection of water resources for the different hydrocarbon fractions in soil, noting detections of (predominantly) heavy end hydrocarbons were identified.

There were also detections of other CoC for which no GAC has been derived. The implications of these are discussed in the following contamination assessment.

4.1.4 Water Resource Risk Assessment – Groundwater

The table below shows the comparison of groundwater concentrations to the GAC protective of the underlying water resource receptors (Secondary A Aquifer (superficial deposit) and Superficial B Aquifer (bedrock)):

Receptor	Location	Contaminant exceeding GAC
Secondary A / B Aquifer	WS104	Various PAH Total TPH

There are no GAC derived for the protection of water resources for the different hydrocarbon fractions in groundwater, noting low concentrations of light end aliphatic hydrocarbons (aliphatic C5-C6 and C8-C10) were identified in the groundwater sample. The implications of these are discussed in the following contamination assessment.

4.2 No Applicable GAC

There were a number of detections of other CoC for which no GAC has been derived.

4.2.1 Soil

From the 21 samples analysed for asbestos, four (TP102 at 0.3m, TP111 at 0.3m, WS101 at 0.3-.4m and WS106 at 0.5-0.6m) had detections of asbestos containing material / asbestos fibres. Two of these samples (TP102 and TP111) had asbestos quantification undertaken which indicated that the concentration was <0.001%.

Notable detections have been highlighted in the table below:

Contaminant	Limit of Detection	Measured Concentration	Location	Depth (m bgl)
Total Cyanide	0.5mg/kg	4.7mg/kg	TP112	2.10
1,2,4-Trimethylbenzene	0.006mg/kg	0.008mg/kg	WS106	0.50-0.60
2-Methylnaphthalene	0.01mg/kg	0.04mg/kg 0.02mg/kg	TP109 WS106	0.50 0.50-0.60
Carbazole	0.01mg/kg	0.04mg/kg 0.26mg/kg 0.1mg/kg	TP108 TP109 WS106	0.60 0.50 0.50-0.60
Dibenzofuran	0.01mg/kg	0.07mg/kg 0.06mg/kg	TP109 WS106	0.50 0.50-0.60

4.2.2 Groundwater

Notable detections have been highlighted in the table below:

Contaminant	Limit of Detection	Measured Concentration	Location
1,3,5-Trimethylbenzene	3 µg/l	13 µg/l	WS104

Contaminant	Limit of Detection	Measured Concentration	Location
Di-n-butyl phthalate	1.5 µg/l	5.3 µg/l	
Diethyl phthalate	1 µg/l	59 µg/l	

4.3 Contamination assessment

4.3.1 Human Health Receptors

The site soils have been assessed for a “commercial” end-use. No exceedances of GAC have been identified within the soil and groundwater samples analysed.

Although concentrations of asbestos were low in the samples tested, the nature of asbestos could mean that it is distributed in much higher quantities elsewhere on site. Given that much of the made ground contained demolition rubble, there is the possibility that asbestos is present. However, the pathway for asbestos fibres to future site users would be broken by hardstanding (i.e. the proposed roads and buildings) and if a capping layer was installed for areas of soft landscaping (assumed 300mm thick). A capping layer is likely to be used as the current surfacing is unlikely to be suitable as a growing medium.

In one sample (TP112 at 2.10m), a concentration of total cyanide was detected above the detection limit. The same sample was also tested for free cyanide which was not detected. For cyanide, the pathway for this to affect human health is through direct contact, given the proposed development (where the direct contact pathway is likely to be broken by hardstanding/capping of soft landscaping), the depth of the sample and lack of other elevated concentrations elsewhere on site, and that the cyanide was not detected in its free form, the risk from total cyanide is not considered significant.

The concentrations of the other identified contaminants (without an applicable GAC) are relatively minor and are not considered to present a significant risk to the proposed end users.

Generic Assessment Criteria are not designed to assess the acute risk posed to groundworkers, the public etc. which may arise during redevelopment works. It is recommended that the contractor conducts a risk assessment and employs suitable mitigation measures such as hygiene facilities and mitigation of dust emissions from the site during redevelopment works.

4.3.2 Water Resource Receptors

Concentrations of PAH compounds were detected in soil samples from many of the investigation locations in excess of the GAC protective of controlled waters, with highest total PAH concentrations reported within the made ground samples. PAH compounds were also detected in the groundwater sample obtained during the post investigation monitoring. Given the general low level of the concentrations reported, that PAHs tend to have low solubility and mobility in groundwater and leaching of PAH from within the made ground into the groundwater will be greatly reduced by the presence of buildings/hardstanding; it is considered that there is not a significant risk to the identified water resource receptors.

Exceedances of GAC of other CoC within the soil samples were encountered in samples of made ground at shallow depths (i.e. below 1.0m bgl) with the exception of one sample in deep made ground (TP112 at 2.10m). The concentrations of the other identified CoC (without an applicable GAC) are relatively minor in the soil samples (predominantly within made ground) and groundwater sample.

There was no obvious water body within the underlying superficial deposits. The Alluvium was cohesive and unlikely to contain any significant water body. As identified within the desk study, logs obtained from the BGS and planning portal surrounding the site indicate that a shallow groundwater body within the superficial deposits was not present.

Given the general low level of exceedances and concentrations reported, that a significant groundwater body does not appear to be present across site (or within the wider area), given the limited potential resource value of the various aquifers and leaching of CoC from within the made ground into the groundwater will be greatly

reduced by the presence of buildings/hardstanding; it is considered that there is not a significant risk to the identified water resource receptors.

4.4 Updated Conceptual Site Model

The following table presents the updated CSM with pollutant linkages considered remaining as potentially active based on the findings of the investigation

Receptor	Source	Pathway	Risk	Justification
Future Site Users	Ground Gas	Migration through future site structures	Medium	Some form of protection measures will be required. Additional investigation will be required to confirm the extent and exact requirements of the protection measures.
	Asbestos fibres within made ground material	Particulate inhalation / dermal contact / ingestion	Low	This Source-Pathway-Receptor is potentially active. However, the concentrations are very low and unlikely to pose a significant risk given the proposed end use. However, given that demolition rubble was encountered across site, the presence of asbestos cannot be ruled out Assuming a capping layer is installed in areas of soft landscaping as part of the redevelopment and hard standing would cover the remainder of site, the pathway would be broken.
Future Construction Worker	Asbestos fibres within made ground material	Particulate inhalation / dermal contact / ingestion /	Low	This Source-Pathway-Receptor is potentially active, however, concentrations are very low. Nevertheless, a safe system of working should be used to protect construction workers (such as dust suppression, suitable PPE and decontamination units)

5 Implications for Proposed Development

The following subsections describe the assessment that has been undertaken to discuss the potential implications the ground conditions have on the proposed redevelopment. The interpretation has been based on the findings of the desk study and preliminary site investigation data.

5.1 Foundations

Ground conditions comprised a thickness of made ground which generally varied between 0.9m and 2.7m thick (with an average thickness of approximately 1.5m). In the location of TP112, the base of the made ground was not proven (at 4.2m bgl). The made ground is variable in nature and strength/degree of compaction and is not considered to represent a suitable founding medium in its current condition. Foundations will therefore need to fully penetrate the made ground.

In the east of site, Alluvium was encountered (proven in locations TP111, TP113, WS104 and WS105) comprising soft cohesive deposits proven to depths of between 2.0m and 3.8m bgl (with an average thickness of approximately 2.8m). Due to the potential for significant total and differential settlements, it is considered that foundations will likely need to fully penetrate these deposits, however, ground improvement techniques may be feasible subject to detailed design.

Underlying the made ground / Alluvium (where present) were the River Terrace Deposits, which broadly comprised medium dense becoming very dense granular material. It is considered that this unit will form a suitable bearing stratum for the proposed development. There were some units within the Terrace Deposits which included firm sandy gravelly clay. There was no obvious correlation across site to the lateral extent of these cohesive units.

Traditional shallow foundations, such as strip or pad foundations, formed within the medium dense to dense granular or firm to stiff cohesive River Terrace Deposits at between 1.5m and 2.0m depth are likely to be suitable. Where deep made ground or Alluvium is present, foundations will need to be deepened. It is likely that piled foundations would be required to achieve this. Alternatively, some form of ground improvement technique (such as vibro-compaction) may be suitable, however further advice form a specialist ground improvement contractor will be required prior to finalising the foundation option. For piled foundations or ground improvement, additional investigation will be required to enable detailed design, and in particular to prove the depth to rock.

In the western area of the site, where the River Terrace Deposits are shallow enough to support spread foundations, preliminary foundation calculations have been undertaken. These indicate that for a traditional pad (up to 2m square) at a minimum of 2.0m depth, bearing within the medium dense granular materials or firm cohesive materials, a design bearing resistance of 110kN/m^2 will be appropriate in order to satisfy the ultimate and serviceable limit states in accordance with Eurocode 7 - Geotechnical Design. This is only applicable for foundations with loads that are applied vertically and centrally. To satisfy the serviceable limit state settlement has been limited to 25mm.

In the absence of design loads the bearing capacity assessment has been undertaken for Design Approach 1, Combination 2 only, and a further assessment taking account of anticipated loadings will be required during detailed design in order to confirm the limit states are satisfied. All foundations will need to fully penetrate any made ground (including earthworks materials placed as general fill) and soft or loose natural soils and be founded a minimum of 150mm into the founding stratum. The foundation excavation should then be blinded.

If strip foundations are adopted, they are likely to be supported by soils of variable compressibility, and as such it is recommended that mesh reinforcement be incorporated in the strip foundation to help limit differential settlement.

5.2 Floor slab

Given the thickness of made ground material, it is recommended that fully suspended floor slab is adopted.

5.3 Buried Concrete

Based on the laboratory test data, subsurface ground conditions appear to be consistent with ACEC Class AC-2 with respect to buried concrete (BRE Special Digest 1: 2005 “Concrete in aggressive ground”). The Design Sulphate Class is DS-2.

5.4 Roads and Hardstanding

The road pavement is likely to be constructed on a subgrade of made ground. The made ground on site is likely to be variable and for preliminary design purposes is considered to have a CBR of 2%.

It is recommended that once the site has been graded to the appropriate pavement formation level, it is inspected and, if necessary, in situ CBR testing be conducted on the subgrade to confirm the appropriate pavement design (i.e. to determine the subbase and capping thickness). In addition, the formation should be proof-rolled and any soft/loose pockets encountered should be excavated and replaced with well compacted granular fill prior to pavement construction. Requirements for the design of road pavements are given in the Highways Agency, ‘Design Manual for Roads and Bridges, Volume 7. Pavement Design and Maintenance: Foundations HD 25/94’.

It should also be noted that cohesive material could be susceptible to changes in moisture content due to prevailing weather conditions, trafficking by construction plant etc. Care should be taken to ensure the formation is protected from such changes.

5.5 Groundwater Control

The investigation identified that the ground conditions beneath the site were variable, however, several seepages were identified which could affect shallow excavations. During the construction phase, groundwater could be encountered in excavations and therefore groundwater control measures, such as sump pumping, should be accounted for.

5.6 Ground Gas

Following a review of the information obtained within this ground investigation, it is considered that there are two potential sources to generate permanent ground gas at the Site; made ground and Alluvium. The made ground did not contain any obvious signs of material that would generate ground gas (such as evidence of organic or ashy material, or evidence of sewage sludge), however, this does not mean that it is not present within the site. As such, as per the guidance set out in BS 8576:2013 *Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs)*, it is now considered to be a “low to very low” gas generation potential.

Notwithstanding the above, any potentially generated gas does have some potential to migrate laterally due to the granular units identified, however, this may be limited due to the heterogeneous nature of the deposits. As the generation potential is very low the risk to Site users is considered to be relatively low.

A single ground gas monitoring visit was undertaken, and due to the limited data set the following should be considered as preliminary only, further testing will be required to fully characterise the site. The data indicates that elevated levels of carbon dioxide are present at the Site (maximum value of 8.1% in WS104). Of particular note is that the recorded concentrations were sustained over time with similar peak and steady recorded values. Flow rates were not particularly high with a maximum recorded flow rate of 0.3l/hr (WS106). The monitoring visit was undertaken during a period of relatively high atmospheric pressure (1029mbar).

Due to the low flow rates the Gas Screening Value for carbon dioxide is <0.001 l/hr which would place the site into Characteristic Situation (CS) 1. If using the worst-case values across the site, the GSV would be 0.002l/hr, which would also place the site into CS1. However, due to the high recorded carbon dioxide it is considered likely that the CS will need to be increased to CS2 which would include installing some form of basic gas protection measures.

However, further assessment would be required to fully determine the ground gas risk and to allow appropriate gas protection measures to be designed.

5.7 Waste Management

At this stage it is not known whether there will be scope to reuse excavated materials within the proposed redevelopment. However, careful management of soils during excavation works will ensure optimum utilisation of soil resources.

Natural soils that are excavated and reused on the same site are not classified as waste and therefore can be reused. If these soils were to be transferred directly to another site, they would require a Materials Management Plan (MMP)/ Design Statement in line with CL:AIRE document 'Definition of Waste: Development Industry Code of Practice'. Alternatively, they could be taken to a facility with an Environmental Permit that enables reuse.

The investigation has indicated that there was a significant thickness (average 1.5m thick) of made ground. Waste classification of the made ground soil arisings has been undertaken as part of the preliminary assessment and has indicated that the made ground soils (assessed as a whole) would be classified as non-hazardous.

Should the made ground materials be reused on site as part of the development, it is considered that the material could be suitable to be reused under a MMP providing it meets the "four factors test" (protection of human health and the environment, suitability for use (without further treatment), certainty of use and quantity of material). Excess material or material that does not comply with the "four factors test" would need to be removed as waste.

Waste Acceptance Criteria (WAC) testing was not undertaken as part of the investigation and would be required to assess if the materials can be accepted at an inert waste landfill.

Results of the waste classification is presented in Appendix L.

5.8 Earthworks

Significant earthworks are not likely to be required as part of the development, however, should foundation arisings or other materials be considered for reuse, these should be classified and compacted in accordance with the Highways Agency Manual of Contract for Highways Work, Volume 1: Specification for Highway Works, Series 600, Earthworks (SHW) (available at www.standardsforhighways.co.uk).

5.9 Other Development Constraints

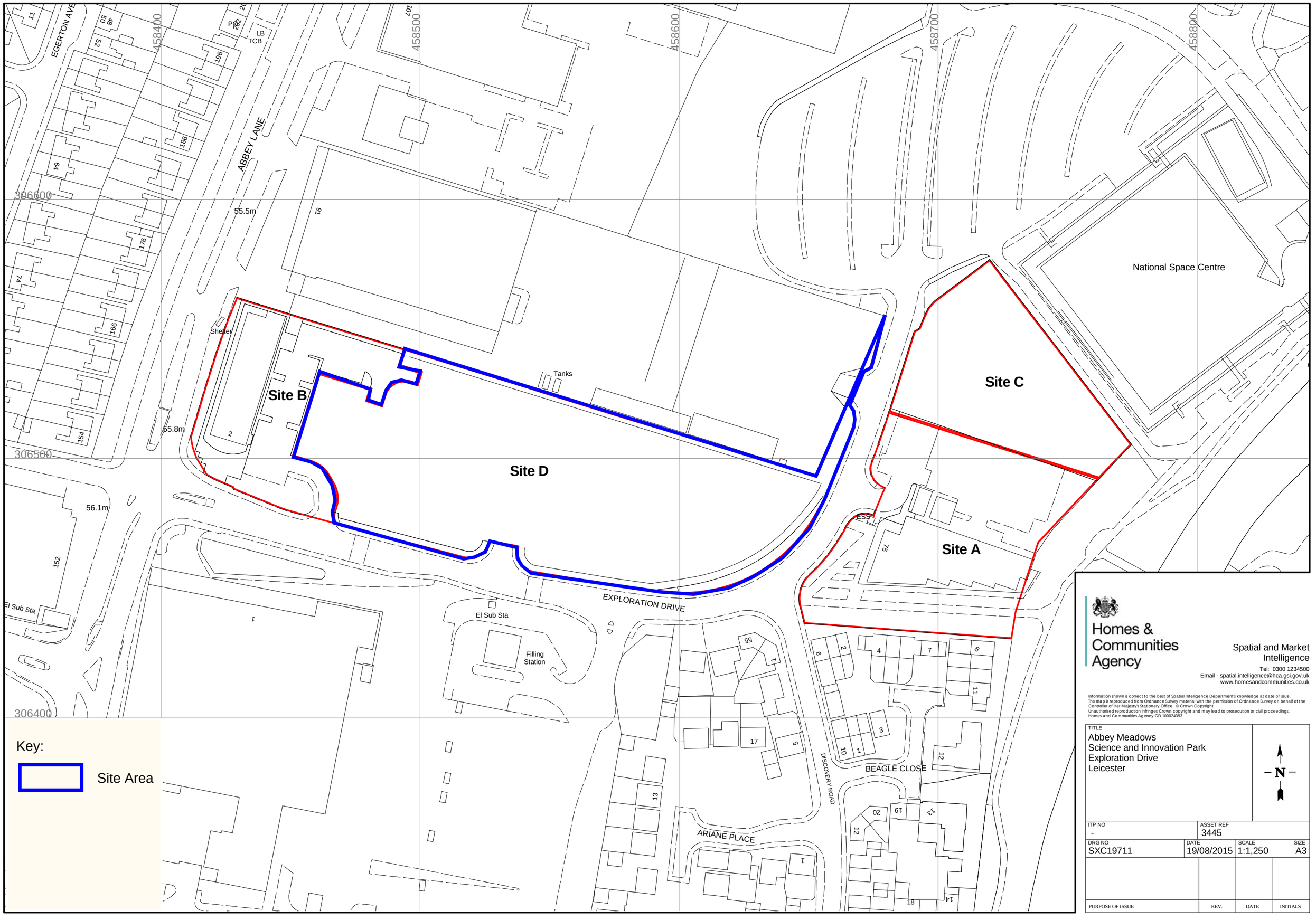
5.9.1 Soakaways

The site investigation has confirmed the presence of a predominantly granular material present below the made ground. As such, subject to detailed design and further investigation, soakaway systems could be potentially utilised.

5.9.2 Historical Foundations

The investigation targeted specific areas (such as historical bakery and vehicle testing centre) and from the exploratory locations undertaken, no evidence of historical foundations was identified. However, at location TP109, a concrete obstruction (assumed to represent an old foundation to the historical filter beds related to the sewage works) was identified.

It should be assumed that further historical foundations do remain within parts of the site, and these will need to be grubbed out and removed prior to development.



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TITLE
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ITP NO	ASSET REF
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DRG NO	DATE	SCALE	SIZE
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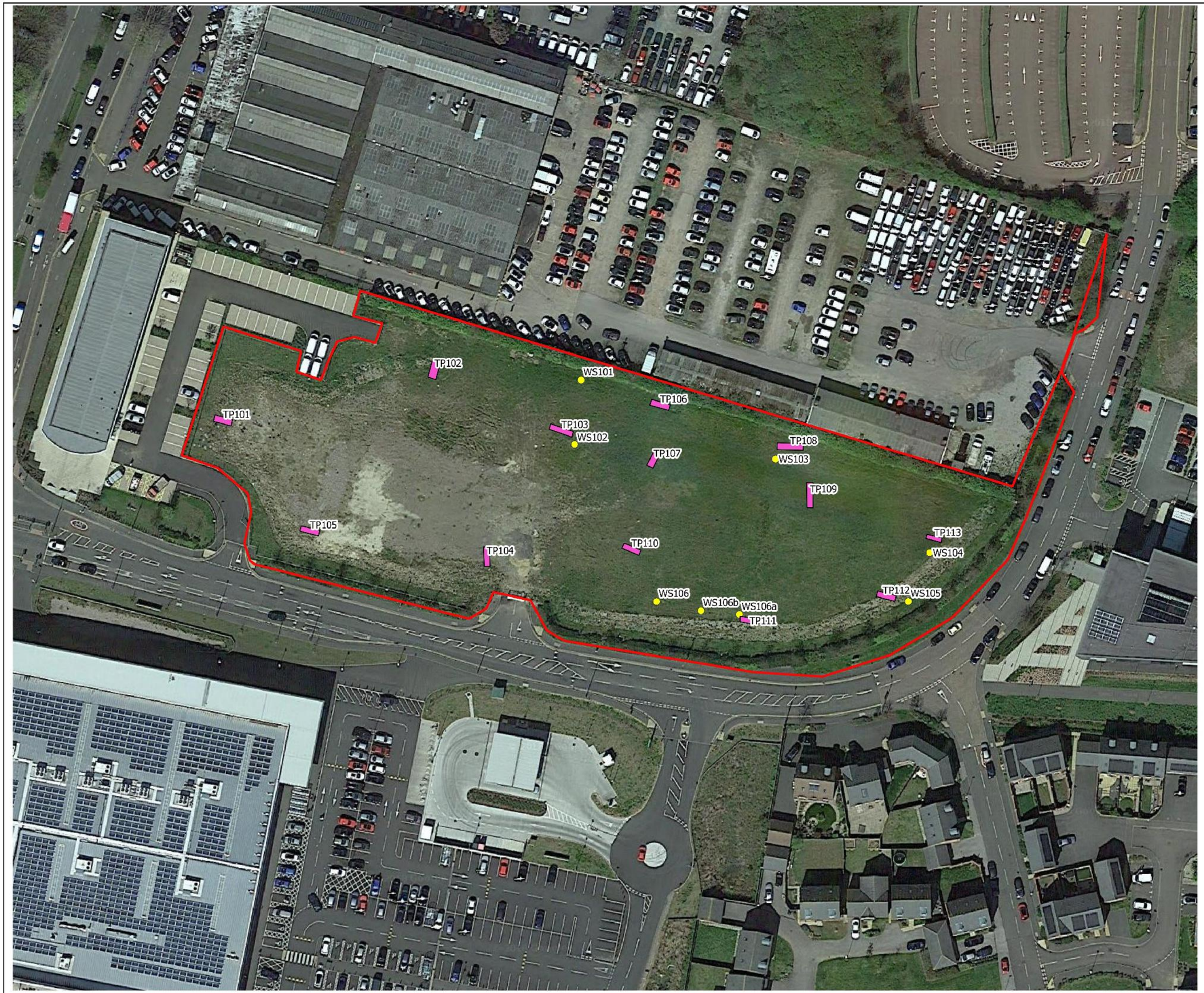
PURPOSE OF ISSUE	REV.	DATE	INITIALS



Legend

- Window Sample
- Trial Pits
- Site Boundary

Notes:

SYMBOLS FOR BOREHOLES, TRIAL PITS AND OTHER SPECIFIC FEATURES ARE REPRESENTATIONS OF LOCATION ONLYAND UNLESS OTHERWISE SPECIFIED, DO NOT REPRESENT THE TRUE SIZE OF THE FEATURE.

Title:
Exploratory Hole Location Plan

Site:
LCC_Pinoeer Park_HCA Land Due Diligence Assessment

Client:
Leicester City Council

Project:
10016750

Figure 2

Date: 23/02/20118
Drawn By: JJH
DRG No: 1001675006

ARCADIS Design & Consultancy for natural and built assets

APPENDIX C

Study Limitations

IMPORTANT: This section should be read before reliance is placed on any of the information, opinions, advice, recommendations or conclusions contained in this report.

1. This report has been prepared by Arcadis UK Ltd (Arcadis), with all reasonable skill, care and diligence within the terms of the Appointment and with the resources and manpower agreed with Leicester City Council (the 'Client'). Arcadis does not accept responsibility for any matters outside the agreed scope.

2. This report has been prepared for the sole benefit of the Client unless agreed otherwise in writing.

3. Unless stated otherwise, no consultations with authorities or funders or other interested third parties have been carried out. Arcadis are unable to give categorical assurance that the findings will be accepted by these third parties as such bodies may have unpublished, more stringent objectives. Further work may be required by these parties.

4. All work carried out in preparing this report has used, and is based on, Arcadis' professional knowledge and understanding of current relevant legislation. Changes in legislation or regulatory guidance may cause the opinion or advice contained in this report to become inappropriate or incorrect. In giving opinions and advice, pending changes in legislation, of which Arcadis is aware, have been considered. Following delivery of the report, Arcadis have no obligation to advise the Client or any other party of such changes or their repercussions.

5. This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report.

6. Whilst this report and the opinions made are correct to the best of Arcadis' belief, Arcadis cannot guarantee the accuracy or completeness of any information provided by third parties.

7. This report has been prepared based on the information reasonably available during the project programme. All information relevant to the scope may not have been received.

8. This report refers, within the limitations stated, to the condition of the Site at the time of the inspections. No warranty is given as to the possibility of changes in the condition of the Site since the time of the investigation.

9. The content of this report represents the professional opinion of experienced environmental consultants. Arcadis does not provide specialist legal or other professional advice. The advice of other professionals may be required.

10. Where intrusive investigation techniques have been employed they have been designed to provide a reasonable level of assurance on the conditions. Given the discrete nature of sampling, no investigation technique is capable of identifying all conditions present in all areas. In some cases the investigation is further limited by site operations, underground obstructions and above ground structures. Unless otherwise stated, areas beyond the boundary of the site have not been investigated.

11. If below ground intrusive investigations have been conducted as part of the scope, service tracing for safe location of exploratory holes has been carried out. The location of underground services shown on any drawing in this report has been determined by visual observations and electromagnetic techniques. No guarantee can be given that all services have been identified. Additional services, structures or other below ground obstructions, not indicated on the drawing, may be present on Site.

12. Unless otherwise stated the report provides no comment on the nature of building materials, operational integrity of the facility or on any regulatory compliance issue

APPENDIX D

Site Investigation Methodologies / Laboratory Testing

METHODOLOGIES

Borehole Formation

Investigation Locations

The following methods and techniques were undertaken to construct the exploratory holes at the site:

- 6no. window sample boreholes were progressed by dynamic sampling techniques using a Dando Terrier drilling rig to a maximum depth of 4.4m bgl
- 13no. trial pits were progressed using a JCB-3CX mechanical backhoe excavator to a maximum depth of 4.3m bgl.

All of the window sample holes were commenced with a hand excavated trial pit for utility avoidance purposes

Dynamic Sampling

Dynamic sampling (Window sampling) was completed using a track-mounted sampling rig capable of driving windowless sampling tubes using a mechanical hammer dropped repeatedly from a self-governed height.

A description of the recovered materials was recorded by the supervising engineer.

Sub-samples of the material recovered in the liners were taken to enable representative laboratory testing. Generally small disturbed samples were taken at each change in stratum and at 0.5 m intervals thereafter in clay soils; and small bulk samples were taken at 1 m intervals where the sand and gravel content of the soil was significant.

Standard penetration tests (SPT) were undertaken using the track mounted rig at 1.0m centres.

Trial Pitting

Trial pitting was undertaken using a JCB-3CX mechanical backhoe excavator.

The soil was placed at the side of the excavation where the recovered materials were recorded by the supervising engineer. Inspection and photographs of the excavation were undertaken at ground level, entry into the exaction was not permitted.

Samples of the material recovered were taken to enable representative laboratory testing. Generally small disturbed samples were taken at each change in stratum and at 0.5 m intervals thereafter in clay soils; and small bulk samples were taken at 1 m intervals where the sand and gravel content of the soil was significant.

In situ and ex situ Testing

General

In situ testing was carried out within the relevant exploratory hole. Where tests were undertaken within or associated with a specific borehole, the test data is presented within the relevant exploratory hole log. As such, the location details will be the same as the associated hole and its position will be the same as the exploratory hole with which it is associated.

Standard Penetration Tests

Standard penetration tests (SPT) were carried out at 1m intervals throughout the borehole to provide a profile of the soil's resistance with depth and a disturbed soil samples was recovered from the SPT split-spoon tool or a disturbed sample was taken over the range of the test interval.

The N-values as determined in the field are presented on the borehole logs as uncorrected values that do not take into account the energy losses or efficiency of the automatic trip hammer used to drive the test tool into the ground.

Determination of undrained shear strength using Hand Vane apparatus

Hand shear vane tests were carried out using a Controls hand shear vane with a cruciform vane of 20mm diameter. The tests were made in samples taken from trial pits and placed beside the exaction for testing.

The test was performed in general accordance with the manufacturer's instructions and the vane was inserted a minimum distance of 70 mm below the surface tested. The vane head was rotated slowly at a speed not greater than 1 revolution per minute until the soil has failed in shear or the maximum reading of the device was achieved.

The undrained soil strength was calculated by comparing the reading taken against the calibration graph provided with the shear vane in kPa.

Where possible, three tests were made to provide an average value, however, it should be noted that where natural fissures or discontinuities are present the minimum values may provide a better representation of the mass consistency of the soil and may be significant.

Due to the nature of the samples tested, the results are indicative for assistance in determining soil consistency for logging purposes only and should not be used to classify soil strength. The results are presented within Appendix E.

Consistency Determination Using Pocket Penetrometer

Pocket penetrometer tests were carried out at selected depths within clay soils. The tests were carried out on a fresh surface after the core had been split lengthways. Where possible, three tests were made to provide an average value.

Due to the small amount of soil that the pocket penetrometer applies force to it is considered that the results only provide an indication of soil consistency and are have been used to assistance in determining soil consistency for logging purposes only and should not be used to classify soil strength. The results are presented on the exploratory hole logs within Appendix E.

VOC Head Space Screening

The presence of Volatile Organic Compounds (VOC) within the ground was determined using a photoionization detector (PID) to detect the 'headspace' vapours emitted by the compounds. The method is applicable to a wide range of compounds that have sufficiently high volatility to be effectively liberated from the soil or water matrix in normal temperature and pressure ranges.

The headspace test was undertaken on the freshly extracted soil sample at regular intervals of 0.5m (or every change in lithology) by placing a small amount of material into a dedicated sample bag, which was then tied trapping air. The sample was then shaken for about 15 seconds to break-up and disperse the soil before resting the sample for about 5 minutes.

To assess the headspace vapour, the PID probe was inserted through the side of the plastic sample bag into the headspace area. The PID reading recorded was the highest response observed in the first 10 seconds. The screening results are presented on the relevant exploratory holes logs within Appendix E.

The testing was undertaken using a RAE Systems MiniRAE 2000 with a 10.6 eV lamp.

The PID instrument was calibrated regularly throughout the day using isobutylene reference gas concentrations.

Installations and Post-Fieldwork Monitoring

Installations to enable long term monitoring of the site were made in all boreholes, the details of which are summarised in below and are also provided on the relevant borehole logs.

Post-fieldwork Monitoring

Post-field work monitoring was undertaken on one visits on 5th February 2018 to record permanent ground gas emissions, groundwater levels and obtain a groundwater sample.

During the monitoring visit, after completion of the ground gas emission monitoring, there was one well which contained water (WS104) which was purged by removing three well volumes of groundwater and sampling was then undertaken. It was purged dry, and so sampling was conducted on the purged groundwater.

LABORATORY TESTING

Geotechnical and geo-environmental chemical testing was undertaken on selected samples obtained from the exploratory holes. The testing was scheduled by the geotechnical and/or geo-environmental engineer and the testing was undertaken by an Arcadis approved testing laboratory.

Geotechnical Laboratory Testing

The geotechnical tests detailed in the table below were carried out in accordance with either BS1377:1990: Parts 1 to 8; BS EN ISO 17892: Parts 1 to 12; BRE SD 1:2005; or other methods as listed.

Test	Method	No of Determinations
Moisture content	BS1377 Pt2-3.2	14
1-point liquid and plastic limit	BS 1377 Pt2-4.3 & 5.3	11
Particle size distribution	BS1377 Pt2 – 9.2	10
Sedimentation	BS1377 Pt2 – 9.4/9.5	4

Geo-Environmental Laboratory Testing

Geo-environmental tests were undertaken on soil and groundwater specimens obtained from the samples collected from the Site. Testing was carried out for the contaminants detailed in the tables below.

Data	Information
Chemical laboratory	Exova Jones Laboratorios Ltd. (Jones)
Accreditation	Jones are United Kingdom Accreditation Service (UKAS) & monitoring Certification Scheme (MCertS) accredited (for selected chemical analysis).

Data	Information
Chemical analyses (soil)	Asbestos Identification; Asbestos Quantification; Metals by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES); Polycyclic Aromatic Hydrocarbons (PAH) by Gas Chromatography-Mass Spectrometry (GC-MS); TPH CWG by GC-MS and GC-FID; VOC by GC-MS; SVOC by GC-MS; Total and free cyanide; Phenols Index; Nitrate; Nitrite; Fluoride; Total Organic Carbon; Total sulphate; Water soluble sulphate; Sulphur; Sulphide; pH; Faecal and total coliforms; and Glycols
Chemical analyses (groundwater)	Dissolved Metals by Inductively Coupled Plasma Mass Spectrometry (ICP-MS); Speciated PAH; TPH CWG; SVOC; VOC; Total and free cyanide; Nitrate; Nitrite; Fluoride; Total Organic Carbon; Total sulphate; Water soluble sulphate; Sulphur; Sulphide; and Glycols

APPENDIX E

Exploratory Hole Logs

ARCADIS Design & Consultancy for natural and built assets

Arcadis, Part 3rd Floor, Charter House, 62-68 Hills Road, Cambridge CB2 1LA

Tel: +44(0)1223 935011

Borehole Number
WS101

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Hole Diameter (mm):	Scale 1:25
Client: Leicester City Council		Easting: Northing:	Well Diameter (mm): 50 Filter Material: gravel	Logged by: O. Cox
Project: 10016750	Date: 30/01/2018	Method: Hand dug inspection pit to 1.2 bgl. Dynamic percussive drilling to 2.43m bgl		Checked by: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	SPT N Value	Well Details	Water Level
MADE GROUND: Grass over dark brown slightly clayey slightly gravelly slightly cobbly medium to coarse SAND. Gravel is angular to subangular fine to coarse of brick, flint and concrete. Cobble is SA of brick and concrete.				J	0.30-0.40	<1				
MADE GROUND: brown sandy subangular fine to coarse GRAVEL of brick and concrete. Sand is fine to medium.		0.50						N=10 (6,3/2,2,3 ,3)		
Soft to firm brown sandy slightly gravelly CLAY. Sand is medium, gravel is subangular fine to medium of flint, chalk and quartz.		1.45		D	1.60-1.70	<1	32			
Very dense orange slightly clayey slightly gravelly medium to coarse SAND. Gravel is angular to subangular fine to medium of flint and quartz. ---slightly saturated from 1.9m bgl onwards.		1.90		J SPT	1.90-2.00 2.00-2.43	<1		50/275mm (4,3/5,5,1 8,22 for 50mm)		
End of Borehole at 2.43 m		2.43								

Key:
- D Disturbed Sample
- B Bulk Sample
- U Undisturbed Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Remarks: Refusal at 2.43m bgl on very dense gravelly sand. Slightly saturated from 1.90m.

ARCADIS Design & Consultancy for natural and built assets

Arcadis, Part 3rd Floor, Charter House, 62-68 Hills Road, Cambridge CB2 1LA

Tel: +44(0)1223 935011

Borehole Number
WS102

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Hole Diameter (mm):	Scale 1:25
Client: Leicester City Council		Easting: Northing:	Well Diameter (mm): 50 Filter Material: gravel	Logged by: O. Cox
Project: 10016750	Date: 30/01/2018	Method: Hand dug inspection pit to 1.2 bgl. Dynamic percussive drilling to 4.00m bgl		Checked by: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	SPT N Value	Well Details	Water Level
MADE GROUND: Grass over soft dark brown slightly sandy gravelly CLAY. Sand is fine to medium, gravel is subangular to subrounded fine to coarse of flint, brick and concrete.		0.40								
MADE GROUND: Dark brown slightly clayey sandy subangular fine to coarse GRAVEL of flint, brick and concrete. Sand is medium. ---loose rebar noted to 1.20m				SPT	1.20-1.65			N=22 (6,6/5,5,5 ,7)		1
Soft orangish brown sandy slightly gravelly CLAY. Sand is fine to medium, gravel is subangular to subrounded fine to medium of flint.		1.50		J D	1.60-1.70 1.70-1.80	<1 <1	35			
Firm to stiff orangish brown sandy slightly gravelly CLAY. Sand is fine to medium, gravel is subangular fine of flint and quartz.		2.00		SPT	2.00-2.45		54	N=10 (3,2/2,3,2 ,3)		2
Stiff orangish brown sandy slightly gravelly CLAY. Sand is fine to medium, gravel is subangular fine of flint and quartz.		2.50					125			
Dense becoming very dense orange slightly gravelly medium to coarse SAND. Gravel is subangular fine of flint and quartz. ---Quartz cobble noted at 3.1 - 3.3m bgl.		3.00		SPT B	3.00-3.45 3.00-3.50	<1		N=32 (7,5/7,9,8 ,8)		3
---Sand becoming very dense at the base upon refusal at 4.0m bgl.				SPT	3.70-4.00			50/150mm (8,13/21,2 3,6 for 0mm)		
End of Borehole at 4.00 m		4.00								4

Key:
- D Disturbed Sample
- B Bulk Sample
- U Undisturbed Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Remarks: Refusal at 4.00m bgl on very dense gravelly sand. No groundwater strikes noted.

ARCADIS Design & Consultancy for natural and built assets

Arcadis, Part 3rd Floor, Charter House, 62-68 Hills Road, Cambridge CB2 1LA

Tel: +44(0)1223 935011

Borehole Number

WS103

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Hole Diameter (mm):	Scale 1:25
Client: Leicester City Council		Easting: Northing:	Well Diameter (mm): 50 Filter Material: gravel	Logged by: O. Cox
Project: 10016750	Date: 30/01/2018	Method: Hand dug inspection pit to 1.2 bgl. Dynamic percussive drilling to 4.38m bgl		Checked by: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	SPT N Value	Well Details	Water Level
MADE GROUND: Grass over soft dark brown slightly sandy gravelly CLAY. Sand is fine to medium, gravel is subangular fine of flint and brick.		0.20								
MADE GROUND: Dark brown slightly clayey slightly sandy subangular fine to coarse GRAVEL of flint, brick and concrete. Sand is medium to coarse.										
---Slight odour (chemical) noted on sample at 0.6m bgl.				J	0.60-0.70	1.2				
				SPT	1.20-1.65			N=7 (2,2/1,1,3 ,2)		1
Soft to firm brown sandy slightly gravelly CLAY. Sand is medium, gravel is subangular fine to medium of flint, chalk and quartz.		1.60		J	1.60-1.70	<1				
---Occasional black organic lenses noted between 1.6 - 2.7m bgl.				SPT	2.00-2.45		44	N=8 (1,2/2,2,2 ,2)		2
				D	2.30-2.40	<1				
Stiff orangish brown sandy slightly gravelly CLAY. Sand is medium, gravel is subangular fine of flint.		2.70					97			
---slightly saturated from 2.7m bgl onwards.		2.90								
Medium dense becoming very dense with depth orange slightly gravelly medium SAND. Gravel is subangular fine of flint.				SPT B	3.00-3.45 3.00-4.00	<1		N=27 (9,11/8,6, 7,6)		3
---Sand becoming very dense at the base upon refusal at 4.0m bgl.				SPT	4.00-4.38			50/225mm (7,7/13,19 ,4,14 for 0mm)		4
End of Borehole at 4.38 m		4.38								

Key:

D	Disturbed Sample	PPT	Pocket Penetrometer Test
B	Bulk Sample	PID	Photoionisation Detector
U	Undisturbed Sample	SPT	Standard Penetration Test (Uncorrected)
J	Jar Sample		
▽	Water Strike		
▼	Standing Water Level		

Remarks: Refusal at 4.38m bgl on very dense gravelly sand. Slightly saturated from 2.70m.

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Tel: +44(0)1223 935011

Borehole Number

WS104

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Hole Diameter (mm):	Scale 1:25
Client: Leicester City Council		Easting: Northing:	Well Diameter (mm): 50 Filter Material: gravel	Logged by: O. Cox
Project: 10016750	Date: 31/01/2018	Method: Hand dug inspection pit to 1.2 bgl. Dynamic percussive drilling to 4.40m bgl		Checked by: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	SPT N Value	Well Details	Water Level
MADE GROUND: Grass over soft dark brown slightly sandy slightly gravelly CLAY. Sand is fine to medium, gravel is subangular fine of flint and brick.		0.20								
MADE GROUND: Grass over soft dark brown sandy gravelly CLAY. Sand is medium to coarse, gravel is subangular to rounded fine to coarse of flint, concrete and brick.				D	0.40-0.50	<1				
MADE GROUND: Light brown slightly clayey sandy subangular to subrounded fine to medium GRAVEL of brick concrete and flint. Sand is fine to coarse.		0.70								1
				SPT	1.20-1.65			N=21 (10,12/11, 4,3,3)		
Firm dark grey slightly sandy CLAY/SILT (friable). Sand is fine.		1.45		D	1.60-1.80	<1	50			
							50			
Firm dark grey slightly silty slightly sandy CLAY. Sand is fine.		2.00		SPT	2.00-2.45			N=8 (1,1/2,1,2 ,3)		2
				D	2.10-2.30	<1				
				J	2.30-2.40	<1				
Firm to stiff orange sandy gravelly CLAY. Sand is medium to coarse, gravel is subangular medium of flint.		2.90		SPT	3.00-3.45			N=12 (2,2/2,3,3 ,4)		3
							27			
				D	3.40-3.50	<1				
Very dense orange clayey gravelly medium to coarse very dense SAND. Gravel is subangular fine of flint.		3.95		SPT	4.00-4.40			50/245mm (4,4/11,16 ,9,14 for 20mm)		4
End of Borehole at 4.40 m		4.40								

Key:

D	Disturbed Sample	PPT	Pocket Penetrometer Test
B	Bulk Sample	PID	Photoionisation Detector
U	Undisturbed Sample	SPT	Standard Penetration Test (Uncorrected)
J	Jar Sample		
▽	Water Strike		
▼	Standing Water Level		

Remarks: Refusal at 4.38m bgl on very dense gravelly sand. No groundwater strikes noted.

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Borehole Number

WS105

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Hole Diameter (mm):	Scale 1:25
Client: Leicester City Council		Easting: Northing:	Well Diameter (mm): 50 Filter Material: gravel	Logged by: O. Cox
Project: 10016750	Date: 31/01/2018	Method: Hand dug inspection pit to 1.2 bgl. Dynamic percussive drilling to 4.38m bgl		Checked by: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	SPT N Value	Well Details	Water Level
MADE GROUND: Grass over soft to firm brown slightly sandy slightly gravelly CLAY. Sand is fine to medium, gravel is subangular to subrounded fine to coarse of brick, flint and concrete.										
---red brick cobble noted at 1.15 - 1.2m bgl.		1.20		B SPT	1.20-1.60 1.20-1.54	<1		50/190mm (7,13/24,2 0,6 for 40mm)		
MADE GROUND: Orangish brown slightly clayey sandy subangular to subrounded fine to medium GRAVEL of brick, flint and concrete.		1.60								
MADE GROUND: Red subangular fine to coarse GRAVEL of red brick.				SPT	2.00-2.45			N=6 (3,2/1,1,2 ,2)		
---slightly saturated between 1.8m and 2.10m bgl.		2.10		D	2.20-2.30	<1	44			
Soft to firm black slightly clayey slightly sandy SILT. Sand is fine to medium.		2.70					47			
Soft to firm brown sandy slightly gravelly CLAY. Sand is fine to medium, gravel is subangular fine of flint, chalk and quartz.				J SPT	3.00-3.10 3.00-3.45	<1		N=21 (2,2/3,5,7 ,6)		
				D	3.50-3.80	<1				
		3.80		D	3.80-4.00	<1				
Very dense brown slightly clayey sandy subangular to subrounded fine to medium GRAVEL of flint and quartz.				SPT	4.00-4.38			50/225mm (7,7/17,16 ,2,15 for 0mm)		
		4.38								
End of Borehole at 4.38 m										

Key:

D	Disturbed Sample	PPT	Pocket Penetrometer Test
B	Bulk Sample	PID	Photoionisation Detector
U	Undisturbed Sample	SPT	Standard Penetration Test (Uncorrected)
J	Jar Sample		
▽	Water Strike		
▼	Standing Water Level		

Remarks: Refusal at 4.38m bgl on very dense gravelly sand. Slightly saturated between 1.80-2.10m.

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Tel: +44(0)1223 935011

Borehole Number

WS106

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Hole Diameter (mm):	Scale 1:25
Client: Leicester City Council		Easting: Northing:	Well Diameter (mm): 50 Filter Material: gravel	Logged by: O. Cox
Project: 10016750	Date: 31/01/2018	Method: Hand dug inspection pit to 1.2 bgl. Dynamic percussive drilling to 1.59m bgl		Checked by: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	SPT N Value	Well Details	Water Level
MADE GROUND: Grass over soft brown slightly sandy slightly gravelly CLAY. Sand is fine to medium, gravel is subangular to subrounded fine to medium of flint and brick.		0.30								
MADE GROUND: Dark brown slightly clayey slightly sandy very dense subangular fine to coarse GRAVEL of flint, brick and quartz. Sand is medium to coarse.				J	0.50-0.60	<1				
---red brick cobble noted at 0.8 - 1.0m bgl.				SPT	1.20-1.59			50/235mm (5,9/15,14 ,10,11 for 10mm)		
				D	1.40-1.60	<1				
End of Borehole at 1.59 m		1.59								

Key:

D	Disturbed Sample	PPT	Pocket Penetrometer Test
B	Bulk Sample	PID	Photoionisation Detector
U	Undisturbed Sample	SPT	Standard Penetration Test (Uncorrected)
J	Jar Sample		
▽	Water Strike		
▼	Standing Water Level		

Remarks: Refusal at 1.6m bgl on cobble/obstruction within the made ground. No groundwater strikes noted.

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Tel: +44(0)1223 935011

Borehole Number **WS106A**

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Hole Diameter (mm):	Scale 1:25
Client: Leicester City Council		Easting: Northing:	Well Diameter (mm): Filter Material:	Logged by: O. Cox
Project: 10016750	Date: 31/01/2018	Method: Hand dug inspection pit to 1.2 bgl. Dynamic percussive drilling to 1.51m bgl		Checked by: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	SPT N Value	Well Details	Water Level
MADE GROUND: Grass over soft brown slightly sandy slightly gravelly CLAY. Sand is fine to medium, gravel is subangular fine of flint and brick.		0.20								
MADE GROUND: Dark brown clayey sandy very dense subangular fine to coarse GRAVEL of flint, brick and quartz. Sand is medium to coarse.				SPT	1.20-1.51			50/160mm (12,6/26,17,7 for 10mm)		
End of Borehole at 1.51 m		1.51								

Key:

D	Disturbed Sample	PPT	Pocket Penetrometer Test
B	Bulk Sample	PID	Photoionisation Detector
U	Undisturbed Sample	SPT	Standard Penetration Test (Uncorrected)
J	Jar Sample		
▽	Water Strike		
▼	Standing Water Level		

Remarks: Refusal at 1.6m bgl on concrete cobbles within the made ground. No groundwater strikes noted.

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Arcadis, Part 3rd Floor, Charter House, 62-68 Hills Road, Cambridge CB2 1LA

Tel: +44(0)1223 935011

Borehole Number
WS106B

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Hole Diameter (mm):	Scale 1:25
Client: Leicester City Council		Easting: Northing:	Well Diameter (mm): Filter Material:	Logged by: O. Cox
Project: 10016750	Date: 31/01/2018	Method: Hand dug inspection pit to 1.2 bgl. Dynamic percussive drilling to 1.58m bgl		Checked by: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	SPT N Value	Well Details	Water Level
MADE GROUND: Grass over soft brown slightly sandy slightly gravelly CLAY. Sand is fine to medium, gravel is subangular fine of flint and brick.		0.20								
MADE GROUND: Dark brown clayey sandy very dense subangular fine to coarse GRAVEL of flint, brick and quartz. Sand is medium to coarse.				SPT	1.20-1.58			50/225mm (6,9/13,21 ,1,15 for 0mm)		
End of Borehole at 1.58 m		1.58								

Key:
- D Disturbed Sample
- B Bulk Sample
- U Undisturbed Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Remarks: Refusal at 1.6m bgl on cobble/obstruction within the made ground. No groundwater strikes noted.

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Trial Pit Number: **TP101**

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 4.50 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 24/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: Greyish brown gravelly fine to coarse SAND. Gravel is angular to sub-rounded of brick, concrete and granite.		0.20		PID	0.10-0.20	<1		
				D	0.30-0.40			
MADE GROUND: (Firm) grey and light brown mottled slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine, subangular to subrounded of flint.				PID	0.50-0.60	<1	117	
---minor black staining from 0.2-0.9m (no odour noted)								1
		1.10		B	1.10-1.40			
Orange slightly gravelly very clayey very silty medium SAND / slightly sandy slightly gravelly CLAY. Gravel is fine, subangular to subrounded of flint.				J	1.20-1.30	<1		
								2
		2.10		PID	2.10-2.20	<1		
Orange slightly silty slightly gravelly medium SAND.								
								3
				PID	3.50-3.60	<1		
				B	3.80-4.10			
								4
				PID	4.10-4.20	<1		
		4.20						
End of Trial Pit at 4.20 m								

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered
Remarks:

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Trial Pit Number: TP102

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 4.50 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 24/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: (Firm) grey and light brown mottled slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine, subangular to subrounded of flint. ---minor black staining from 0.3-0.5m (no odour noted)				D J	0.30-0.40	<1		
MADE GROUND: Brownish black gravelly SAND. Gravel is fine to coarse, subangular to subrounded of brick and concrete.		0.50		PID	0.60-0.70	<1		
Orange slightly gravelly clayey medium SAND. Gravel is fine, subangular to subrounded of flint.		0.80		PID	0.90-1.00	<1		1
				PID	1.50-1.60	<1		
Orange slightly silty gravelly medium SAND. Gravel is fine to medium, subangular to rounded of flint.		1.90		B	2.00-2.30			2
				PID	2.50-2.60	<1		3
End of Trial Pit at 4.10 m		4.10						4

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered
Remarks:

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Trial Pit Number: TP103

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 5.50 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 24/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: (Firm) grey and light brown mottled slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine, subangular to subrounded of flint.				PID D	0.20-0.30 0.20-0.40	<1		
		0.40						
MADE GROUND: Greyish black gravelly fine to coarse SAND with medium cobble content of up to 300mm granite. Gravel is fine to coarse, subangular to subrounded of brick, concrete and granite.				PID	0.50-0.60	<1		
		0.70						
MADE GROUND: Blackish red gravelly SAND. Gravel is fine to coarse, angular to subangular of roofing tile and brick.				PID	0.80-0.90	<1		1
		1.40		J	1.40-1.50	<1		
Orange gravelly very clayey medium SAND. Gravel is fine, subangular to subrounded of flint.				B	1.60-1.90			
		2.00						2
Orange slightly gravelly medium SAND. Gravel is fine to medium, subangular to rounded of flint.				PID	2.50-2.60	<1		3
								4
				PID	4.10-4.20	<1		
		4.20						
End of Trial Pit at 4.20 m								

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered
Remarks:

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Trial Pit Number **TP104**

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 4.50 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 24/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: Greyish brown gravelly fine to coarse SAND. Gravel is angular to sub-rounded of brick, concrete and granite.				PID	0.20-0.30	<1		
				J	0.30-0.40	<1		
MADE GROUND: (Firm) grey and light brown mottled slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine, subangular to subrounded of flint.		0.30						
				PID	0.80-0.90	<1		
				D	0.90-1.00			
							144	1
MADE GROUND: Greyish red gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subangular of roof tile.		1.10						
				PID	1.50-1.60	<1		
Firm orange with black specks silty very sandy CLAY.		1.60		PID	1.70-1.80	<1		
								2
				PID	2.50-2.60	<1	117	
				D	3.00-3.10			3
				PID	3.20-3.30	<1		
---Soft to firm 3.3-4.2m. Sand content varies across depth.								
				PID	4.00-4.10	<1	77	4
End of Trial Pit at 4.20 m		4.20						

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Seepage at 1.60m
Remarks:

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Trial Pit Number: TP105

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 4.50 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 24/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: Light greyish cream very gravelly fine to coarse SAND. Gravel is medium of concrete.				J	0.10-0.20	<1		
		0.20						
MADE GROUND: (Firm) grey and light brown mottled slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine, subangular to subrounded of flint.				PID	0.50-0.60	<1	135	
		1.10		PID	1.10-1.20	<1		
MADE GROUND: Greyish brown clayey sandy fine to coarse GRAVEL of concrete and brick. Sand is fine to coarse.				D	1.30-1.40			
		1.40						
Firm orange with black specks very sandy CLAY becoming clayey SAND with depth.				PID	1.50-1.60	<1		
		1.90		PID	1.90-2.00	<1		
Orange slightly gravelly silty medium SAND.				B	2.50-2.80			
		4.30						
End of Trial Pit at 4.30 m								

1
2
3
4

Key:
D Disturbed Sample
B Bulk Sample
J Jar Sample
▽ Water Strike
▼ Standing Water Level
PPT Pocket Penetrometer Test
PID Photoionisation Detector
SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered
Remarks:

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Trial Pit Number: TP106

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 4.00 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 25/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: (Soft to firm) grey and brown mottled sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine, subangular to subrounded of flint and brick.		0.20		PID	0.10-0.20	<1		
MADE GROUND: Greyish black gravelly clayey SAND. Gravel is fine to coarse, subangular to subrounded of flint, brick and concrete.				PID	0.50-0.60	<1		
				B PID	1.00-1.30 1.00-1.10	<1		1
Soft greyish brown slightly sandy slightly gravelly CLAY. Gravel is medium, subangular to subrounded of flint.		1.40 1.50		D	1.50-1.60		42	
Orange slightly gravelly very clayey medium SAND / slightly sandy slightly gravelly CLAY.				PID	1.70-1.80	<1		
				PID	2.00-2.10	<1		2
				J	2.50-2.60			
				PID	3.00-3.10	<1		3
End of Trial Pit at 4.00 m		4.00						4

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered
Remarks:

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Trial Pit Number: TP107

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 4.00 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 25/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: (Soft to firm) grey and brown mottled sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine, subangular to subrounded of flint and brick.		0.20						
MADE GROUND: Brownish grey gravelly clayey medium SAND with medium cobble content of whole bricks. Gravel is fine to coarse, subangular of brick and concrete.				J B	0.50-0.60 0.60-0.90	<1		
MADE GROUND: Light brown slightly gravelly clayey medium SAND. Gravel is fine to medium, subangular to subrounded of flint.		0.90		PID	1.00-1.10	<1		1
MADE GORUND: Greyish black gravelly SAND. Gravel is fine to medium, subangular of flint and concrete.		1.20		PID PID	1.50-1.60 1.60-1.70	<1 <1		
Orange slightly clayey gravelly medium SAND. Gravel is medium, subangular to subrounded of flint.		1.60		B	2.00-2.30			2
				PID	3.00-3.10	<1		3
								4
End of Trial Pit at 4.20 m		4.20						

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered
Remarks:

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Trial Pit Number **TP108**

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 6.50 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 25/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: (Soft to firm) grey and brown mottled sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine, subangular to subrounded of flint and brick.		0.10		PID	0.30-0.40			
MADE GROUND: Brownish grey gravelly clayey medium SAND with medium cobble content of whole bricks. Gravel is fine to coarse, subangular of brick and concrete.		0.60		J	0.60-0.70	<1		
MADE GROUND: Orange slightly clayey gravelly SAND. Gravel is fine to medium, subangular to rounded of flint.		0.80 0.90						
MADE GROUND: Grey sandy fine to medium subrounded GRAVEL of mudstone. Sand is fine to medium.							57	1
MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Sand is medium. Gravel is medium, subangular to rounded of flint.		1.40		D	1.30-1.40	<1		
MADE GROUND: Brown clayey silty gravelly medium SAND. Gravel subangualr to subrounded of flint, rarely brick and asphalt.				B PID	1.50-1.80 1.50-1.60	<1		
Orange slightly clayey gravelly medium SAND. Gravel is fine to medium, subangular to rounded of flint.		1.80		PID	2.00-2.10	<1		2
				PID	3.00-3.10	<1		3
				PID	4.00-4.10	<1		4
End of Trial Pit at 4.20 m		4.20						

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered
Remarks:

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Trial Pit Number
TP109

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 6.00 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 25/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: Brownish grey gravelly clayey medium SAND with medium cobble content of whole bricks. Gravel is fine to coarse, subangular to subrounded of brick and concrete.				J	0.50-0.60	<1		
		0.70		PID	0.70-0.80	<1		
MADE GROUND: Greyish pink gravelly medium SAND. Gravel is fine to medium, subangular of granite. ---concrete foundation encountered at 0.80m and 0.90m wide		0.90		B	1.00-1.30			1
MADE GROUND: Brown clayey gravelly medium SAND. Gravel is fine to medium, subangular to subrounded of flint, brick and concrete.				PID	1.50-1.60	<1		
				B	1.70-2.00			
				PID	1.90-2.00	<1		
Brown gravelly very silty medium SAND.		2.00						2
Orange clayey medium SAND.		2.30		PID	2.50-2.60	<1		
								3
End of Trial Pit at 3.90 m		3.90						4

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered
Remarks: Concrete foundation at 0.8m running east-west, 0.9m wide

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Trial Pit Number: TP110

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 4.50 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 25/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: (Firm) grey and light brown mottled slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine, subangular to subrounded of flint.		0.20		PID	0.20-0.30	<1		
MADE GROUND: Greyish brown clayey gravelly SAND. Gravel is fine to coarse, subangular to subrounded of brick and concrete.								
---rebar in material at 1.0m								
---granite cobbles from 1.4m				J	1.60-1.70	<1		
MADE GORUND: Light brownish grey clayey medium SAND.		1.90						
MADE GROUND: Orange clayey silty gravelly medium SAND. Gravel is fine, subangular to subrounded of flint, asphalt and granite rarely brick and slag.		2.40		B PID	2.40-2.70 2.40-2.50	<1		
Orange clayey silty gravelly medium SAND. Gravel is fine, subangular to subrounded of flint.		2.70		PID	3.40-3.50	<1		
End of Trial Pit at 3.90 m		3.90						

Water Level scale: 1, 2, 3, 4

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered
Remarks:

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Trial Pit Number **TP111**

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 4.50 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 25/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: (Firm) grey and light brown mottled slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine, subangular to subrounded of flint.		0.20		PID	0.10-0.20	<1		
				J	0.30-0.40	<1		
MADE GROUND: Brownish grey gravelly clayey medium SAND with medium cobble content of whole bricks. Gravel is fine to coarse, subangular to subrounded of brick and concrete.								
---cobbles and boulders (up to 300mm) of granite between 1.0-1.50m								1
Soft slightly friable grey slightly sandy slightly gravelly CLAY.		1.50		PID	1.50-1.60	<1	22	
				D	2.00-2.10			2
Orange slightly gravelly medium SAND. Gravel is fine to medium, subangular to rounded of flint.		2.60		PID	2.60-2.70	<1		
								3
End of Trial Pit at 3.80 m		3.80						
								4

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered
Remarks:

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Trial Pit Number: TP112

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 4.50 Support Method: Not used Pit Stability: Slight collapse at 2.0m	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 25/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: Greyish brown clayey gravelly SAND. Gravel is fine to coarse, subangular to subrounded of brick and concrete.				PID	0.50-0.60	<1		
MADE GROUND: Greyish red slightly clayey gravelly medium SAND with medium cobble content of whole bricks. Gravel is fine to coarse, subangular to subrounded brick.		1.10		PID	1.50-1.60	<1		
MADE GROUND: Soft to firm greyish black friable CLAY. Slight rotten/sulphur type odour.		2.10		J	2.10-2.20	<1	67	
MADE GROUND: Orange clayey very gravelly medium SAND. Gravel is fine, subangular to subrounded of flint occasionally brick, concrete, wood and granite.		3.00		PID B	3.00-3.10 3.50-3.80	<1		
End of Trial Pit at 4.10 m		4.10						

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Seepage at 1.4m and 2.1m

Remarks:

ARCADIS Design & Consultancy for natural and built assets

Arcadis, Part 3rd Floor, Charter House, 62-68 Hills Road, Cambridge CB2 1LA

Tel: +44(0)1223 935011

Trial Pit Number: TP113

Site: Land at Pioneer Park	Location: Land off Exploration Drive, Leicester, LE4 5NU	Ground Level (mAOD):	Trial pit width (m): 0.80 Trial pit length (m): 4.50 Support Method: Not used Pit Stability: Stable during excavation	Scale 1:25
Client: Leicester City Council		Easting: Northing:		Logged By: JK
Project No: 10016750	Date: 25/01/2018	Excavation Method: Backhoe excavator		Checked By: JJH

STRATA RECORD | IN SITU TESTS / SAMPLES | Sheet 1 of 1

Description	Legend	Depth (m bgl)	Level (mAOD)	Sample Type	Sample Depth (m)	PID (ppm)	PPT (kPa)	Water Level
MADE GROUND: Brownish grey gravelly clayey medium SAND with medium cobble content of whole bricks. Gravel is fine to coarse, subangular to subrounded of brick and concrete.				PID	0.50-0.60	<1		
		0.90		J	0.90-1.00	<1		1
Orange clayey gravelly SAND. Gravel is fine to medium, subangular to subrounded of flint. (Possible made ground).								
		1.40					47	
Soft friable grey slightly sandy clayey SILT with rare orange medium sand lenses, black organic pockets and roots.				D	2.00-2.10	<1		2
		2.80		PID	2.80-2.90	<1		
Orange slightly gravelly clayey medium SAND. Gravel is fine, subangular to subrounded of flint.								3
				PID	3.90-4.00	<1		
		4.00						4
End of Trial Pit at 4.00 m								

Key:
- D Disturbed Sample
- B Bulk Sample
- J Jar Sample
- ▽ Water Strike
- ▼ Standing Water Level
- PPT Pocket Penetrometer Test
- PID Photoionisation Detector
- SPT Standard Penetration Test (Uncorrected)

Groundwater: Not encountered

Remarks:

Results of Hand Vane tests

Location ID	Test depth (m)	Average Shear Strength c_u (kPa)	Undrained strength classification
TP101	1.0	37	Low
TP102	0.4	40	Medium
TP104	0.7	39	Low
	2.0	36	Low
	3.0	40	Medium
TP105	0.4	42	Medium
	1.7	35	Low
	1.9	5	Extremely low
TP113	2.0	12	Very low

APPENDIX F

Photographs

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

ARCADIS Design & Consultancy for natural and built assets
1 Whitehall Riverside
Leeds
LS1 4BN
T: 0113 284 5300

Plate 1

General view of the site looking east

Plate 2

General view of the site looking west

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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1 Whitehall Riverside
Leeds
LS1 4BN
T: 0113 284 5300

Plate 3

General view of the site looking south

Plate 4

General view of the site looking north

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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1 Whitehall Riverside
Leeds
LS1 4BN
T: 0113 284 5300

Plate 5

View of TP102 showing stained made ground over natural clayey gravelly sand.

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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1 Whitehall Riverside
Leeds
LS1 4BN
T: 0113 284 5300

Plate 6

TP103 spoil mound showing natural granular material on left and made ground (including granite cobbles and gravel of brick and roof tile)

Plate 7

TP104 showing reworked sandy gravelly clay

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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Leeds
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Plate 8

Water seepage in granular units within TP104

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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1 Whitehall Riverside
Leeds
LS1 4BN
T: 0113 284 5300

Plate 9

Alluvial clayey silt in TP113

Plate 10

Granular material from TP113

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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1 Whitehall Riverside
Leeds
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T: 0113 284 5300

Plate 11

TP109, concrete obstruction running east-west across pit.

Approximately 0.9m wide and encountered at 0.8m depth.

Assume related to historical foundation.

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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T: 0113 284 5300

Plate 12

WS103
1.2-2.0m

Natural sandy gravelly clay from 1.60m.

Plate 13

WS103
2.0-3.0m

Sandy gravelly clay grading into sand from 2.70m.

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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Leeds
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T: 0113 284 5300

Plate 14

WS103
3.0-4.0m

Gravelly sand.

Plate 15

WS104
1.2-2.0m

Made ground to 1.45m (reworked clayey sandy gravel).
Probable alluvial deposit of clay/silt below.

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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Leeds
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Plate 16

WS104
2.0-3.0m

Firm sandy gravelly clay to 2.90m. Firm to stiff below 2.90m.

Plate 17

WS104
3.0-4.0m

Gravelly sand from 2.90m

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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Leeds
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Plate 18

WS105
1.2-2.0m

Reworked gravel.

Plate 19

WS105
2.0-3.0m

Alluvial clayey silt from 2.10m to 2.70m. Soft to firm sandy gravelly clay below.

CLIENT:	Leicester City Council		
REFERENCE:	10016750	**SITE NAME:**	Land at Pioneer Park

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Leeds
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Plate 20

WS105
3.0-4.0m

Clayey sandy gravel from 3.80m.

APPENDIX G

Environmental Laboratory Test Data

Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Arcadis
1 Whitehall Riverside
Leeds
LS1 4BN

4225

Attention :	Jonathan Harris
Date :	6th February, 2018
Your reference :	10016750
Our reference :	Test Report 18/1227 Batch 1
Location :	Pioneer Park
Date samples received :	27th January, 2018
Status :	Final report
Issue :	1

Thirteen samples were received for analysis on 27th January, 2018 of which thirteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Boden BSc
Project Manager

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1227

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	LOD/LOR	Units	Method No.
Sample ID	TP104240118 SO0030	TP105240118 SO0010	TP101240118 SO0120	TP102240118 SO0030	TP103240118 SO0140	TP106250118 SO0250	TP107250118 SO0050	TP108250118 SO0060	TP109250118 SO0050	TP113250118 SO0090			
Depth	0.30	0.10	1.20	0.30	1.40	2.50	0.50	0.60	0.50	0.90			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	24/01/2018	24/01/2018	24/01/2018	24/01/2018	24/01/2018	25/01/2018	25/01/2018	25/01/2018	25/01/2018	25/01/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018			
Arsenic #	12.7	8.4	18.0	NDP	20.5	16.6	22.4	33.7	18.4	14.8	<0.5	mg/kg	TM30/PM15
Barium #	123	113	98	NDP	162	60	180	117	211	175	<1	mg/kg	TM30/PM15
Beryllium	1.2	0.8	1.0	NDP	1.4	0.8	1.4	1.4	2.0	1.0	<0.5	mg/kg	TM30/PM15
Cadmium #	0.1	0.3	0.2	NDP	<0.1	<0.1	0.3	<0.1	0.2	<0.1	<0.1	mg/kg	TM30/PM15
Chromium #	38.5	39.8	49.5	NDP	46.9	40.9	52.1	57.3	60.0	47.0	<0.5	mg/kg	TM30/PM15
Copper #	33	34	11	NDP	16	10	23	<1	36	10	<1	mg/kg	TM30/PM15
Lead #	18	25	15	NDP	36	8	39	18	56	35	<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	NDP	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel #	28.0	18.7	30.7	NDP	32.4	21.1	22.1	25.6	25.2	22.2	<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	<1	NDP	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Vanadium	48	43	37	NDP	54	34	49	64	50	29	<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.5	1.9	1.0	NDP	3.6	1.4	2.0	0.6	1.3	1.6	<0.1	mg/kg	TM74/PM32
Zinc #	74	110	51	NDP	67	43	126	79	100	46	<5	mg/kg	TM30/PM15
Arsenic	-	-	-	15.1	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Barium	-	-	-	163	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Beryllium	-	-	-	1.7	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Cadmium	-	-	-	0.5	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium	-	-	-	56.8	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Copper	-	-	-	43	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Lead	-	-	-	137	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
Mercury	-	-	-	0.1	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel	-	-	-	20.5	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium	-	-	-	<1	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Vanadium	-	-	-	31	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Water Soluble Boron	-	-	-	5.6	-	-	-	-	-	-	<0.1	mg/kg	TM74/PM61
Zinc	-	-	-	143	-	-	-	-	-	-	<5	mg/kg	TM30/PM62

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1227

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	LOD/LOR	Units	Method No.
Sample ID	TP104240118 SO0030	TP105240118 SO0010	TP101240118 SO0120	TP102240118 SO0030	TP103240118 SO0140	TP106250118 SO0250	TP107250118 SO0050	TP108250118 SO0060	TP109250118 SO0050	TP113250118 SO0090			
Depth	0.30	0.10	1.20	0.30	1.40	2.50	0.50	0.60	0.50	0.90			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	24/01/2018	24/01/2018	24/01/2018	24/01/2018	24/01/2018	25/01/2018	25/01/2018	25/01/2018	25/01/2018	25/01/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018			
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.56	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	0.14	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.34	<0.05	0.28	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.21	<0.04	0.19	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.08	0.12	<0.03	<0.03	<0.03	<0.03	1.67	0.26	2.78	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	0.05	<0.04	<0.04	<0.04	<0.04	0.42	0.16	1.40	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.14	0.33	<0.03	0.10	<0.03	<0.03	2.22	0.86	7.60	0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	0.13	0.32	<0.03	0.10	<0.03	<0.03	2.10	0.87	6.49	0.05	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.13	0.31	<0.06	0.07	<0.06	<0.06	1.13	0.53	4.16	0.08	<0.06	mg/kg	TM4/PM8
Chrysene #	0.07	0.21	<0.02	0.07	<0.02	<0.02	1.18	0.49	3.36	0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.13	0.45	<0.07	0.11	<0.07	<0.07	2.00	1.18	5.93	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.07	0.26	<0.04	0.06	<0.04	<0.04	1.08	0.64	3.39	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.05	0.20	<0.04	<0.04	<0.04	<0.04	0.75	0.46	2.38	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.17	0.09	0.44	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.05	0.20	<0.04	<0.04	<0.04	<0.04	0.84	0.43	2.22	<0.04	<0.04	mg/kg	TM4/PM8
PAH 16 Total	0.9	2.5	<0.6	<0.6	<0.6	<0.6	14.7	6.0	40.8	<0.6	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.09	0.32	<0.05	0.08	<0.05	<0.05	1.44	0.85	4.27	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.04	0.13	<0.02	0.03	<0.02	<0.02	0.56	0.33	1.66	<0.02	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	93	83	94	85	96	94	97	93	98	99	<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	-	-	-	-	<0.002	-	-	<0.002	<0.002	-	<0.002	mg/kg	TM15/PM10
Benzene #	-	-	-	-	<0.003	-	-	<0.003	<0.003	-	<0.003	mg/kg	TM15/PM10
Toluene #	-	-	-	-	<0.003	-	-	<0.003	<0.003	-	<0.003	mg/kg	TM15/PM10
Ethylbenzene #	-	-	-	-	<0.003	-	-	<0.003	<0.003	-	<0.003	mg/kg	TM15/PM10
p/m-Xylene #	-	-	-	-	<0.005	-	-	<0.005	<0.005	-	<0.005	mg/kg	TM15/PM10
o-Xylene #	-	-	-	-	<0.003	-	-	<0.003	<0.003	-	<0.003	mg/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	-	-	-	113	-	-	108	99	-	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	-	-	-	147	-	-	125	101	-	<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	7	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM16
>C16-C21 #	<7	87	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
>C21-C35 #	<7	33	<7	14	<7	<7	17	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	127	<19	<19	<19	<19	<19	<19	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1227

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	LOD/LOR	Units	Method No.
Sample ID	TP104240118 SO0030	TP105240118 SO0010	TP101240118 SO0120	TP102240118 SO0030	TP103240118 SO0140	TP106250118 SO0250	TP107250118 SO0050	TP108250118 SO0060	TP109250118 SO0050	TP113250118 SO0090			
Depth	0.30	0.10	1.20	0.30	1.40	2.50	0.50	0.60	0.50	0.90			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	24/01/2018	24/01/2018	24/01/2018	24/01/2018	24/01/2018	25/01/2018	25/01/2018	25/01/2018	25/01/2018	25/01/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018	27/01/2018			
TPH CWG													
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4	7	<4	<4	<4	<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7	<7	30	<7	23	<7	<7	mg/kg	TM5/PM16
>EC21-EC35 #	<7	61	<7	49	<7	<7	162	<7	108	<7	<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	<19	61	<19	49	<19	<19	199	<19	131	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	188	<38	49	<38	<38	199	<38	131	<38	<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	<0.005	<0.005	<0.005 SV	<0.005	-	<0.005 SV	<0.005	-	-	<0.005 SV	<0.005	mg/kg	TM31/PM12
Benzene #	<0.005	<0.005	<0.005 SV	<0.005	-	<0.005 SV	<0.005	-	-	<0.005 SV	<0.005	mg/kg	TM31/PM12
Toluene #	<0.005	<0.005	<0.005 SV	<0.005	-	<0.005 SV	<0.005	-	-	<0.005 SV	<0.005	mg/kg	TM31/PM12
Ethylbenzene #	<0.005	<0.005	<0.005 SV	<0.005	-	<0.005 SV	<0.005	-	-	<0.005 SV	<0.005	mg/kg	TM31/PM12
m/p-Xylene #	<0.005	<0.005	<0.005 SV	<0.005	-	<0.005 SV	<0.005	-	-	<0.005 SV	<0.005	mg/kg	TM31/PM12
o-Xylene #	<0.005	<0.005	<0.005 SV	<0.005	-	<0.005 SV	<0.005	-	-	<0.005 SV	<0.005	mg/kg	TM31/PM12
Total Phenols HPLC	-	-	-	-	<0.15	-	-	<0.15	<0.15	-	<0.15	mg/kg	TM26/PM21
Natural Moisture Content	17.0	20.4	9.6	NDP	14.3	11.0	15.7	6.2	10.9	11.1	<0.1	%	PM4/PM0
Fluoride	-	-	-	-	-	-	-	-	-	-	<0.3	mg/kg	TM173/PM20
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Nitrate as NO3	-	-	-	-	-	-	-	-	-	-	<2.5	mg/kg	TM38/PM20
Nitrite as NO2	-	-	-	-	-	-	-	-	-	-	<0.05	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.645	0.183	0.0201	NDP	0.0919	0.0873	0.0504	0.0321	0.205	0.0163	<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext)	-	-	-	0.148	-	-	-	-	-	-	<0.0015	g/l	TM38/PM60
Chromium III	38.5	39.8	49.5	NDP	46.9	40.9	52.1	57.3	60.0	47.0	<0.5	mg/kg	NONE/NONE
Free Cyanide	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Total Cyanide #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	-	-	-	-	-	-	-	-	-	-	<0.02	%	TM21/PM24
Sulphide	-	-	-	-	-	-	-	-	-	-	<10	mg/kg	TM106/PM119
Faecal Coliforms*	-	-	-	-	-	-	-	-	-	-		cfu/g	Subcontracted
pH #	8.15	10.6	8.25	8.06	8.18	7.81	8.40	8.76	8.63	8.23	<0.01	pH units	TM73/PM11
Total Coliforms*	-	-	-	-	-	-	-	-	-	-		cfu/g	Subcontracted

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1227

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	51-55	56-60	61-65									
Sample ID	TP112250118 SO0210	TP111250118 SO0030	TP110250118 SO0160									
Depth	2.10	0.30	1.60									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	25/01/2018	25/01/2018	25/01/2018									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	27/01/2018	27/01/2018	27/01/2018									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Arsenic #	116	NDP	19.2								<0.5	mg/kg	TM30/PM15
Barium #	867	NDP	257								<1	mg/kg	TM30/PM15
Beryllium	1.7	NDP	1.2								<0.5	mg/kg	TM30/PM15
Cadmium #	5.3	NDP	0.1								<0.1	mg/kg	TM30/PM15
Chromium #	1160_{AA}	NDP	50.8								<0.5	mg/kg	TM30/PM15
Copper #	464_{AA}	NDP	14								<1	mg/kg	TM30/PM15
Lead #	559	NDP	14								<5	mg/kg	TM30/PM15
Mercury #	10.2	NDP	<0.1								<0.1	mg/kg	TM30/PM15
Nickel #	17.1	NDP	32.5								<0.7	mg/kg	TM30/PM15
Selenium #	<1	NDP	<1								<1	mg/kg	TM30/PM15
Vanadium	29	NDP	47								<1	mg/kg	TM30/PM15
Water Soluble Boron #	8.3	NDP	1.6								<0.1	mg/kg	TM74/PM32
Zinc #	982	NDP	65								<5	mg/kg	TM30/PM15
Arsenic	-	20.4	-								<0.5	mg/kg	TM30/PM62
Barium	-	93	-								<1	mg/kg	TM30/PM62
Beryllium	-	1.3	-								<0.5	mg/kg	TM30/PM62
Cadmium	-	0.1	-								<0.1	mg/kg	TM30/PM62
Chromium	-	31.7	-								<0.5	mg/kg	TM30/PM62
Copper	-	17	-								<1	mg/kg	TM30/PM62
Lead	-	28	-								<5	mg/kg	TM30/PM62
Mercury	-	<0.1	-								<0.1	mg/kg	TM30/PM62
Nickel	-	29.9	-								<0.7	mg/kg	TM30/PM62
Selenium	-	<1	-								<1	mg/kg	TM30/PM62
Vanadium	-	45	-								<1	mg/kg	TM30/PM62
Water Soluble Boron	-	1.2	-								<0.1	mg/kg	TM74/PM61
Zinc	-	91	-								<5	mg/kg	TM30/PM62

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1227

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	51-55	56-60	61-65									
Sample ID	TP112250118 SO0210	TP111250118 SO0030	TP110250118 SO0160									
Depth	2.10	0.30	1.60									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	25/01/2018	25/01/2018	25/01/2018									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	27/01/2018	27/01/2018	27/01/2018									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
PAH MS													
Naphthalene #	1.38 AB	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.30 AB	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.50 AB	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Fluorene #	<0.40 AB	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Phenanthrene #	1.99 AB	0.03	<0.03								<0.03	mg/kg	TM4/PM8
Anthracene #	<0.40 AB	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Fluoranthene #	2.72 AB	0.10	<0.03								<0.03	mg/kg	TM4/PM8
Pyrene #	2.44 AB	0.09	<0.03								<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	2.60 AB	0.08	<0.06								<0.06	mg/kg	TM4/PM8
Chrysene #	1.88 AB	0.06	<0.02								<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	3.11 AB	0.10	<0.07								<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	1.66 AB	0.06	<0.04								<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	1.38 AB	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.40 AB	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.80 AB	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
PAH 16 Total	21.0 AB	<0.6	<0.6								<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	2.24 AB	0.07	<0.05								<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.87 AB	0.03	<0.02								<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	99 AB	94	95								<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	-	-	-								<0.002	mg/kg	TM15/PM10
Benzene #	-	-	-								<0.003	mg/kg	TM15/PM10
Toluene #	-	-	-								<0.003	mg/kg	TM15/PM10
Ethylbenzene #	-	-	-								<0.003	mg/kg	TM15/PM10
p/m-Xylene #	-	-	-								<0.005	mg/kg	TM15/PM10
o-Xylene #	-	-	-								<0.003	mg/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	-	-								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	-	-								<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	0.2	<0.1	<0.1 SV								<0.1	mg/kg	TM36/PM12
>C6-C8 #	0.2	<0.1	<0.1 SV								<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1 SV								<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2								<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	<4	<4								<4	mg/kg	TM5/PM16
>C16-C21 #	28	<7	<7								<7	mg/kg	TM5/PM16
>C21-C35 #	358	<7	<7								<7	mg/kg	TM5/PM16
Total aliphatics C5-35	386	<19	<19								<19	mg/kg	TM5/TM36/PM12/PM16

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1227

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	51-55	56-60	61-65								LOD/LOR	Units	Method No.
Sample ID	TP112250118 SO0210	TP111250118 SO0030	TP110250118 SO0160										
Depth	2.10	0.30	1.60										
COC No / misc													
Containers	V J T	V J T	V J T										
Sample Date	25/01/2018	25/01/2018	25/01/2018										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	27/01/2018	27/01/2018	27/01/2018										
TPH CWG													
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1 SV								<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1 SV								<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1 SV								<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	4.7	<0.2	<0.2								<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	14	<4	<4								<4	mg/kg	TM5/PM16
>EC16-EC21 #	59	<7	<7								<7	mg/kg	TM5/PM16
>EC21-EC35 #	477	<7	<7								<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	555	<19	<19								<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	941	<38	<38								<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	<0.005	<0.005	<0.005 SV								<0.005	mg/kg	TM31/PM12
Benzene #	<0.005	<0.005	<0.005 SV								<0.005	mg/kg	TM31/PM12
Toluene #	0.014	<0.005	<0.005 SV								<0.005	mg/kg	TM31/PM12
Ethylbenzene #	<0.005	<0.005	<0.005 SV								<0.005	mg/kg	TM31/PM12
m/p-Xylene #	<0.005	<0.005	<0.005 SV								<0.005	mg/kg	TM31/PM12
o-Xylene #	<0.005	<0.005	<0.005 SV								<0.005	mg/kg	TM31/PM12
Total Phenols HPLC	-	-	-								<0.15	mg/kg	TM26/PM21
Natural Moisture Content	56.6	NDP	12.0								<0.1	%	PM4/PM0
Fluoride	3.0	-	-								<0.3	mg/kg	TM173/PM20
Hexavalent Chromium #	<0.3	<0.3	<0.3								<0.3	mg/kg	TM38/PM20
Nitrate as NO3	<2.5	-	-								<2.5	mg/kg	TM38/PM20
Nitrite as NO2	<0.05	-	-								<0.05	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.247	NDP	0.0951								<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext)	-	1.15	-								<0.0015	g/l	TM38/PM60
Chromium III	1160.0	NDP	50.8								<0.5	mg/kg	NONE/NONE
Free Cyanide	<0.5	<0.5	<0.5								<0.5	mg/kg	TM89/PM45
Total Cyanide #	4.7	<0.5	<0.5								<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	3.59	-	-								<0.02	%	TM21/PM24
Sulphide	<10	-	-								<10	mg/kg	TM106/PM119
Faecal Coliforms*	<10	-	-									cfu/g	Subcontracted
pH #	8.50	8.26	7.72								<0.01	pH units	TM73/PM11
Total Coliforms*	<20	-	-									cfu/g	Subcontracted

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1227

SVOC Report : **Solid**

Please see attached notes for all abbreviations and acronyms

J E Sample No.	21-25	36-40	41-45							LOD/LOR	Units	Method No.
Sample ID	TP103240118 SO0140	TP108250118 SO0060	TP109250118 SO0050									
Depth	1.40	0.60	0.50									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	24/01/2018	25/01/2018	25/01/2018									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	27/01/2018	27/01/2018	27/01/2018									
SVOC MS												
Phenols												
2-Chlorophenol #	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
2-Methylphenol	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
2-Nitrophenol	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
2,4-Dichlorophenol #	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
2,4-Dimethylphenol	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
2,4,5-Trichlorophenol	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
2,4,6-Trichlorophenol	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
4-Chloro-3-methylphenol	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
4-Methylphenol	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
4-Nitrophenol	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Pentachlorophenol	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Phenol #	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
PAHs												
2-Chloronaphthalene #	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
2-Methylnaphthalene #	<0.01	<0.01	0.04							<0.01	mg/kg	TM16/PM8
Phthalates												
Bis(2-ethylhexyl) phthalate	<0.1	<0.1	<0.1							<0.1	mg/kg	TM16/PM8
Butylbenzyl phthalate	<0.1	<0.1	<0.1							<0.1	mg/kg	TM16/PM8
Di-n-butyl phthalate	<0.1	<0.1	<0.1							<0.1	mg/kg	TM16/PM8
Di-n-Octyl phthalate	<0.1	<0.1	<0.1							<0.1	mg/kg	TM16/PM8
Diethyl phthalate	<0.1	<0.1	<0.1							<0.1	mg/kg	TM16/PM8
Dimethyl phthalate #	<0.1	<0.1	<0.1							<0.1	mg/kg	TM16/PM8
Other SVOCs												
1,2-Dichlorobenzene	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
1,3-Dichlorobenzene	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
1,4-Dichlorobenzene	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
2-Nitroaniline	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
2,4-Dinitrotoluene	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
2,6-Dinitrotoluene	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
3-Nitroaniline	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
4-Bromophenylphenylether #	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
4-Chloroaniline	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
4-Chlorophenylphenylether	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
4-Nitroaniline	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Azobenzene	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Bis(2-chloroethyl)ether	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Carbazole	<0.01	0.04	0.26							<0.01	mg/kg	TM16/PM8
Dibenzofuran #	<0.01	<0.01	0.07							<0.01	mg/kg	TM16/PM8
Hexachlorobenzene	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Hexachlorobutadiene #	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Hexachlorocyclopentadiene	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Hexachloroethane	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Isophorone #	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Nitrobenzene #	<0.01	<0.01	<0.01							<0.01	mg/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	125	115	119							<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	125	126	123							<0	%	TM16/PM8

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1227

VOC Report : **Solid**

J E Sample No.	21-25	36-40	41-45									
Sample ID	TP103240118 SO0140	TP108250118 SO0060	TP109250118 SO0050									
Depth	1.40	0.60	0.50									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	24/01/2018	25/01/2018	25/01/2018									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	27/01/2018	27/01/2018	27/01/2018									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<0.002	<0.002	<0.002								<0.002	mg/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.002	<0.002	<0.002								<0.002	mg/kg	TM15/PM10
Chloromethane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Vinyl Chloride	<0.002	<0.002	<0.002								<0.002	mg/kg	TM15_A/PM10
Bromomethane	<0.001	<0.001	<0.001								<0.001	mg/kg	TM15/PM10
Chloroethane #	<0.002	<0.002	<0.002								<0.002	mg/kg	TM15/PM10
Trichlorofluoromethane #	<0.002	<0.002	<0.002								<0.002	mg/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<0.006	<0.006	<0.006								<0.006	mg/kg	TM15/PM10
Dichloromethane (DCM) #	<0.03	<0.03	<0.03								<0.03	mg/kg	TM15/PM10
trans-1-2-Dichloroethene #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
1,1-Dichloroethane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
cis-1-2-Dichloroethene #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
2,2-Dichloropropane	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
Bromochloromethane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Chloroform #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
1,1,1-Trichloroethane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
1,1-Dichloropropene #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Carbon tetrachloride #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
1,2-Dichloroethane #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
Benzene #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Trichloroethene (TCE) #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
1,2-Dichloropropane #	<0.006	<0.006	<0.006								<0.006	mg/kg	TM15/PM10
Dibromomethane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Bromodichloromethane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
cis-1-3-Dichloropropene	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
Toluene #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
trans-1-3-Dichloropropene	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
1,1,2-Trichloroethane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Tetrachloroethene (PCE) #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
1,3-Dichloropropane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Dibromochloromethane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
1,2-Dibromoethane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Chlorobenzene #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Ethylbenzene #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
p/m-Xylene #	<0.005	<0.005	<0.005								<0.005	mg/kg	TM15/PM10
o-Xylene #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Styrene	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15_A/PM10
Bromoform	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Isopropylbenzene #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
Bromobenzene	<0.002	<0.002	<0.002								<0.002	mg/kg	TM15/PM10
1,2,3-Trichloropropane #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
Propylbenzene #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
2-Chlorotoluene	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
4-Chlorotoluene	<0.003	<0.003	<0.003								<0.003	mg/kg	TM15/PM10
tert-Butylbenzene #	<0.005	<0.005	<0.005								<0.005	mg/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<0.006	<0.006	<0.006								<0.006	mg/kg	TM15/PM10
sec-Butylbenzene #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
4-Isopropyltoluene #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
1,3-Dichlorobenzene #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
1,4-Dichlorobenzene #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
n-Butylbenzene #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
1,2-Dichlorobenzene #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<0.007	<0.007	<0.007								<0.007	mg/kg	TM15/PM10
Hexachlorobutadiene	<0.004	<0.004	<0.004								<0.004	mg/kg	TM15/PM10
Naphthalene	<0.027	<0.027	<0.027								<0.027	mg/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<0.007	<0.007	<0.007								<0.007	mg/kg	TM15/PM10
Surrogate Recovery Toluene D8	113	108	99								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	147	125	101								<0	%	TM15/PM10

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/1227	1	TP104240118SO0030	0.30	5	31/01/2018	**General Description (Bulk Analysis)**	soil/stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD
18/1227	1	TP105240118SO0010	0.10	10	31/01/2018	**General Description (Bulk Analysis)**	soil/stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD
18/1227	1	TP101240118SO0120	1.20	15	31/01/2018	**General Description (Bulk Analysis)**	soil/stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD
18/1227	1	TP102240118SO0030	0.30	20	31/01/2018	**General Description (Bulk Analysis)**	soil/stones
					31/01/2018	**Asbestos Fibres**	Fibre Bundles
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos Type**	Chrysotile
					31/01/2018	**Asbestos Level Screen**	less than 0.1%
					06/02/2018	**Total ACM Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					06/02/2018	**Total Detailed Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					06/02/2018	**Total Gravimetric Quantification (ACM + Detailed) (% Asb)**	<0.001 (mass %)
					06/02/2018	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					06/02/2018	**Asbestos Gravimetric & PCOM Total**	<0.001 (mass %)

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/1227	1	TP103240118SO0140	1.40	25	31/01/2018	**General Description (Bulk Analysis)**	soil/stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD
18/1227	1	TP106250118SO0250	2.50	30	31/01/2018	**General Description (Bulk Analysis)**	Soil/Stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD
18/1227	1	TP107250118SO0050	0.50	35	31/01/2018	**General Description (Bulk Analysis)**	soil.stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD
18/1227	1	TP108250118SO0060	0.60	40	31/01/2018	**General Description (Bulk Analysis)**	soil.stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD
18/1227	1	TP109250118SO0050	0.50	45	31/01/2018	**General Description (Bulk Analysis)**	soil.stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD
18/1227	1	TP113250118SO0090	0.90	50	31/01/2018	**General Description (Bulk Analysis)**	Soil/Stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/1227	1	TP112250118SO0210	2.10	55	31/01/2018	**General Description (Bulk Analysis)**	Soil/Stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD
18/1227	1	TP111250118SO0030	0.30	60	31/01/2018	**General Description (Bulk Analysis)**	soil/stones
					31/01/2018	**Asbestos Fibres**	Fibre Bundles
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos Type**	Chrysotile
					31/01/2018	**Asbestos Level Screen**	less than 0.1%
					06/02/2018	**Total ACM Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					06/02/2018	**Total Detailed Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					06/02/2018	**Total Gravimetric Quantification (ACM + Detailed) (% Asb)**	<0.001 (mass %)
					06/02/2018	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					06/02/2018	**Asbestos Gravimetric & PCOM Total**	<0.001 (mass %)
18/1227	1	TP110250118SO0160	1.60	65	31/01/2018	**General Description (Bulk Analysis)**	soil/stones
					31/01/2018	**Asbestos Fibres**	NAD
					31/01/2018	**Asbestos Fibres (2)**	NAD
					31/01/2018	**Asbestos ACM**	NAD
					31/01/2018	**Asbestos ACM (2)**	NAD
					31/01/2018	**Asbestos Type**	NAD
					31/01/2018	**Asbestos Type (2)**	NAD
					31/01/2018	**Asbestos Level Screen**	NAD

Client Name: Arcadis **Matrix : Solid**
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
18/1227	1	TP102240118SO0030	0.30	16-20	Asbestos detected in sample
18/1227	1	TP111250118SO0030	0.30	56-60	Asbestos detected in sample

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 18/1227						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/1227

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution
AB	x10 Dilution

JE Job No: 18/1227

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

JE Job No: 18/1227

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes

JE Job No: 18/1227

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM61	As received solid samples are extracted with hot water in a 20:1 ratio of water to soil ready for analysis by ICP.			AR	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.			AR	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM106	Determination of Sulphide by Skalar Continuous Flow Analyser	PM119	As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis.			AR	Yes
TM131	Quantification of Asbestos Fibres and ACM, based on HSG248 and SCA method.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes

JE Job No: 18/1227

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AR	Yes
Subcontracted	Subcontracted analysis, sent to an ISO 17025 accredited laboratory where possible.						Yes
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

Exova Jones Environmental

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Arcadis
3 Picadilly Place
Manchester
M1 3BN

4225

Attention :	Jonathan Harris
Date :	21st February, 2018
Your reference :	10016750
Our reference :	Test Report 18/1550 Batch 1
Location :	Pioneer Park
Date samples received :	1st February, 2018
Status :	Final report
Issue :	1

Eight samples were received for analysis on 1st February, 2018 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Simon Gomery BSc
Project Manager

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1550

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			LOD/LOR	Units	Method No.
Sample ID	WS103-0.60-0.70-20180130	WS103-1.60-1.70-20180130	WS101-0.30-0.40-20180130	WS101-1.90-2.00-20180130	WS102-1.60-1.70-20180130	WS104-2.30-2.40-20180131	WS106-0.50-0.60-20180131	WS105-3.00-3.10-20180131					
Depth	0.60-0.70	1.60-1.70	0.30-0.40	1.90-2.00	1.60-1.70	2.30-2.40	0.50-0.60	3.00-3.10					
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J					
Sample Date	30/01/2018	30/01/2018	30/01/2018	30/01/2018	30/01/2018	31/01/2018	31/01/2018	31/01/2018					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018					
Arsenic #	39.2	48.0	NDP	-	8.4	23.5	NDP	12.8			<0.5	mg/kg	TM30/PM15
Barium #	146	260	NDP	-	127	230	NDP	63			<1	mg/kg	TM30/PM15
Beryllium	1.3	1.5	NDP	-	0.6	2.2	NDP	0.8			<0.5	mg/kg	TM30/PM15
Cadmium #	0.4	0.8	NDP	-	0.3	0.4	NDP	0.2			<0.1	mg/kg	TM30/PM15
Chromium #	54.7	54.7	NDP	-	62.0	80.2	NDP	71.2			<0.5	mg/kg	TM30/PM15
Copper #	13	18	NDP	-	22	62	NDP	18			<1	mg/kg	TM30/PM15
Lead #	8	35	NDP	-	44	124	NDP	21			<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	NDP	-	<0.1	1.4	NDP	<0.1			<0.1	mg/kg	TM30/PM15
Nickel #	22.7	27.0	NDP	-	18.6	31.0	NDP	17.7			<0.7	mg/kg	TM30/PM15
Selenium #	<1	1	NDP	-	<1	2	NDP	<1			<1	mg/kg	TM30/PM15
Vanadium	60	66	NDP	-	26	55	NDP	31			<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.1	1.8	NDP	-	4.1	5.5	NDP	2.2			<0.1	mg/kg	TM74/PM32
Zinc #	65	100	NDP	-	87	130	NDP	61			<5	mg/kg	TM30/PM15
Arsenic	-	-	17.1	-	-	-	37.7	-			<0.5	mg/kg	TM30/PM62
Barium	-	-	347	-	-	-	216	-			<1	mg/kg	TM30/PM62
Beryllium	-	-	3.9	-	-	-	2.0	-			<0.5	mg/kg	TM30/PM62
Cadmium	-	-	0.2	-	-	-	<0.1	-			<0.1	mg/kg	TM30/PM62
Chromium	-	-	43.0	-	-	-	48.9	-			<0.5	mg/kg	TM30/PM62
Copper	-	-	53	-	-	-	53	-			<1	mg/kg	TM30/PM62
Lead	-	-	95	-	-	-	71	-			<5	mg/kg	TM30/PM62
Mercury	-	-	<0.1	-	-	-	<0.1	-			<0.1	mg/kg	TM30/PM62
Nickel	-	-	39.7	-	-	-	27.4	-			<0.7	mg/kg	TM30/PM62
Selenium	-	-	<1	-	-	-	<1	-			<1	mg/kg	TM30/PM62
Vanadium	-	-	61	-	-	-	75	-			<1	mg/kg	TM30/PM62
Water Soluble Boron	-	-	1.3	-	-	-	0.9	-			<0.1	mg/kg	TM74/PM61
Zinc	-	-	146	-	-	-	176	-			<5	mg/kg	TM30/PM62

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1550

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			LOD/LOR	Units	Method No.
Sample ID	WS103-0.60-0.70-20180130	WS103-1.60-1.70-20180130	WS101-0.30-0.40-20180130	WS101-1.90-2.00-20180130	WS102-1.60-1.70-20180130	WS104-2.30-2.40-20180131	WS106-0.50-0.60-20180131	WS105-3.00-3.10-20180131					
Depth	0.60-0.70	1.60-1.70	0.30-0.40	1.90-2.00	1.60-1.70	2.30-2.40	0.50-0.60	3.00-3.10					
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J					
Sample Date	30/01/2018	30/01/2018	30/01/2018	30/01/2018	30/01/2018	31/01/2018	31/01/2018	31/01/2018					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018					
PAH MS													
Naphthalene #	<0.04	<0.04	0.12	-	<0.04	<0.04	0.08	<0.04			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	0.14	-	<0.03	<0.03	0.31	<0.03			<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	0.23	-	<0.05	<0.05	0.16	<0.05			<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	0.14	-	<0.04	<0.04	0.11	<0.04			<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	1.26	-	<0.03	<0.03	1.75	<0.03			<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	0.43	-	<0.04	<0.04	0.94	<0.04			<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	3.17	-	<0.03	0.07	4.84	<0.03			<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	2.65	-	<0.03	0.07	4.59	<0.03			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	1.08	-	<0.06	<0.06	2.74	<0.06			<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	1.39	-	<0.02	0.06	2.53	<0.02			<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	2.78	-	<0.07	<0.07	6.20	<0.07			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	1.60	-	<0.04	<0.04	3.68	<0.04			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	1.16	-	<0.04	<0.04	2.88	<0.04			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	0.18	-	<0.04	<0.04	0.39	<0.04			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	1.12	-	<0.04	<0.04	2.83	<0.04			<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	17.5	-	<0.6	<0.6	34.0	<0.6			<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	2.00	-	<0.05	<0.05	4.46	<0.05			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	0.78	-	<0.02	<0.02	1.74	<0.02			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	93	96	99	-	98	96	96	97			<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<0.002	-	-	-	-	-	<0.002	-			<0.002	mg/kg	TM15/PM10
Benzene #	<0.003	-	-	-	-	-	<0.003	-			<0.003	mg/kg	TM15/PM10
Toluene #	<0.003	-	-	-	-	-	<0.003	-			<0.003	mg/kg	TM15/PM10
Ethylbenzene #	<0.003	-	-	-	-	-	<0.003	-			<0.003	mg/kg	TM15/PM10
p/m-Xylene #	<0.005	-	-	-	-	-	<0.005	-			<0.005	mg/kg	TM15/PM10
o-Xylene #	<0.003	-	-	-	-	-	<0.003	-			<0.003	mg/kg	TM15/PM10
Surrogate Recovery Toluene D8	108	-	-	-	-	-	92	-			<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	120	-	-	-	-	-	89	-			<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1 SV			<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1 SV			<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1 SV			<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2			<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	<4	<4	-	<4	<4	<4	<4			<4	mg/kg	TM5/PM16
>C16-C21 #	<7	<7	<7	-	<7	<7	<7	<7			<7	mg/kg	TM5/PM16
>C21-C35 #	<7	<7	49	-	<7	<7	82	58			<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	<19	49	-	<19	<19	82	58			<19	mg/kg	TM5/TM36/PM12/PM16

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1550

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			LOD/LOR	Units	Method No.
Sample ID	WS103-0.60-0.70-20180130	WS103-1.60-1.70-20180130	WS101-0.30-0.40-20180130	WS101-1.90-2.00-20180130	WS102-1.60-1.70-20180130	WS104-2.30-2.40-20180131	WS106-0.50-0.60-20180131	WS105-3.00-3.10-20180131					
Depth	0.60-0.70	1.60-1.70	0.30-0.40	1.90-2.00	1.60-1.70	2.30-2.40	0.50-0.60	3.00-3.10					
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J					
Sample Date	30/01/2018	30/01/2018	30/01/2018	30/01/2018	30/01/2018	31/01/2018	31/01/2018	31/01/2018					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018					
TPH CWG													
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1 SV			<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1 SV			<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1 SV			<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2			<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	<4	<4	-	<4	<4	<4	<4			<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	<7	26	-	<7	<7	34	<7			<7	mg/kg	TM5/PM16
>EC21-EC35 #	<7	<7	206	-	<7	<7	307	28			<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	<19	<19	232	-	<19	<19	341	28			<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	281	-	<38	<38	423	86			<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	-	<0.005	<0.005	-	<0.005	<0.005	-	<0.005 SV			<0.005	mg/kg	TM31/PM12
Benzene #	-	<0.005	<0.005	-	<0.005	<0.005	-	<0.005 SV			<0.005	mg/kg	TM31/PM12
Toluene #	-	<0.005	<0.005	-	<0.005	<0.005	-	<0.005 SV			<0.005	mg/kg	TM31/PM12
Ethylbenzene #	-	<0.005	<0.005	-	<0.005	<0.005	-	<0.005 SV			<0.005	mg/kg	TM31/PM12
m/p-Xylene #	-	<0.005	<0.005	-	<0.005	<0.005	-	<0.005 SV			<0.005	mg/kg	TM31/PM12
o-Xylene #	-	<0.005	<0.005	-	<0.005	<0.005	-	<0.005 SV			<0.005	mg/kg	TM31/PM12
Total Phenols HPLC	<0.15	-	-	-	-	-	<0.15	-			<0.15	mg/kg	TM26/PM21
Monoethylene glycol	<0.05	-	-	-	-	-	<0.05	-			<0.05	mg/kg	TM179/PM8
Propylene glycol	<0.05	-	-	-	-	-	<0.05	-			<0.05	mg/kg	TM179/PM8
Diethylene glycol	<0.05	-	-	-	-	-	<0.05	-			<0.05	mg/kg	TM179/PM8
Triethylene glycol	<0.05	-	-	-	-	-	<0.05	-			<0.05	mg/kg	TM179/PM8
Thiodiglycol	<0.05	-	-	-	-	-	<0.05	-			<0.05	mg/kg	TM179/PM8
Natural Moisture Content	11.3	32.1	NDP	-	15.4	36.3	NDP	14.4			<0.1	%	PM4/PM0
Fluoride	1.7	-	-	-	-	-	1.1	-			<0.3	mg/kg	TM173/PM20
Hexavalent Chromium #	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3			<0.3	mg/kg	TM38/PM20
Nitrate as NO3	<2.5	-	-	-	-	-	NDP	-			<2.5	mg/kg	TM38/PM20
Nitrate as NO3	-	-	-	-	-	-	<2.5	-			<2.5	mg/kg	TM38/PM60
Nitrite as NO2	0.43	-	-	-	-	-	NDP	-			<0.05	mg/kg	TM38/PM20
Nitrite as NO2	-	-	-	-	-	-	<0.05	-			<0.05	mg/kg	TM38/PM60
Sulphate as SO4 (2:1 Ext) #	0.0890	0.0357	NDP	0.0092	0.1494	0.0413	NDP	0.0831			<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext)	-	-	0.0145	-	-	-	0.0542	-			<0.0015	g/l	TM38/PM60
Chromium III	54.7	54.7	NDP	-	62.0	80.2	NDP	71.2			<0.5	mg/kg	NONE/NONE
Chromium III	-	-	43.0	-	-	-	48.9	-			<0.5	mg/kg	NONE/NONE
Free Cyanide	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5			<0.5	mg/kg	TM89/PM45
Total Cyanide #	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5			<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	0.41	0.94	-	-	-	-	NDP	-			<0.02	%	TM21/PM24

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1550

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			LOD/LOR	Units	Method No.
Sample ID	WS103-0.60-0.70-20180130	WS103-1.60-1.70-20180130	WS101-0.30-0.40-20180130	WS101-1.90-2.00-20180130	WS102-1.60-1.70-20180130	WS104-2.30-2.40-20180131	WS106-0.50-0.60-20180131	WS105-3.00-3.10-20180131					
Depth	0.60-0.70	1.60-1.70	0.30-0.40	1.90-2.00	1.60-1.70	2.30-2.40	0.50-0.60	3.00-3.10					
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J					
Sample Date	30/01/2018	30/01/2018	30/01/2018	30/01/2018	30/01/2018	31/01/2018	31/01/2018	31/01/2018					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018					
Sulphide	<10	-	-	-	-	-	<10	-			<10	mg/kg	TM106/PM119
pH #	8.84	8.24	8.58	8.09	7.93	7.76	8.63	9.24			<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1550

SVOC Report : **Solid**

J E Sample No.	1-3	19-21											
Sample ID	WS103-0.60-0.70-20180130	WS106-0.50-0.60-20180131											
Depth	0.60-0.70	0.50-0.60									Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J	V J											
Sample Date	30/01/2018	31/01/2018											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	01/02/2018	01/02/2018											
SVOC MS											LOD/LOR	Units	Method No.
Phenols													
2-Chlorophenol #	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
2-Methylphenol	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
2-Nitrophenol	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
2,4-Dichlorophenol #	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
2,4-Dimethylphenol	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
2,4,5-Trichlorophenol	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
2,4,6-Trichlorophenol	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
4-Chloro-3-methylphenol	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
4-Methylphenol	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
4-Nitrophenol	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Pentachlorophenol	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Phenol #	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
2-Methylnaphthalene #	<0.01	0.02									<0.01	mg/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<0.1	<0.1									<0.1	mg/kg	TM16/PM8
Butylbenzyl phthalate	<0.1	<0.1									<0.1	mg/kg	TM16/PM8
Di-n-butyl phthalate	<0.1	<0.1									<0.1	mg/kg	TM16/PM8
Di-n-Octyl phthalate	<0.1	<0.1									<0.1	mg/kg	TM16/PM8
Diethyl phthalate	<0.1	<0.1									<0.1	mg/kg	TM16/PM8
Dimethyl phthalate #	<0.1	<0.1									<0.1	mg/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
1,3-Dichlorobenzene	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
1,4-Dichlorobenzene	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
2-Nitroaniline	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
2,4-Dinitrotoluene	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
2,6-Dinitrotoluene	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
3-Nitroaniline	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
4-Bromophenylphenylether #	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
4-Chloroaniline	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
4-Chlorophenylphenylether	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
4-Nitroaniline	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Azobenzene	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Bis(2-chloroethyl)ether	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Carbazole	<0.01	0.10									<0.01	mg/kg	TM16/PM8
Dibenzofuran #	<0.01	0.06									<0.01	mg/kg	TM16/PM8
Hexachlorobenzene	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Hexachlorobutadiene #	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Hexachlorocyclopentadiene	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Hexachloroethane	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Isophorone #	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Nitrobenzene #	<0.01	<0.01									<0.01	mg/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	108	104									<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	88	107									<0	%	TM16/PM8

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris
JE Job No.: 18/1550

VOC Report : **Solid**

J E Sample No.	1-3	19-21											
Sample ID	WS103-0.60-0.70-20180130	WS106-0.50-0.60-20180131											
Depth	0.60-0.70	0.50-0.60											
COC No / misc													
Containers	V J	V J											
Sample Date	30/01/2018	31/01/2018											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	01/02/2018	01/02/2018											
VOC MS													
Dichlorodifluoromethane	<0.002	<0.002										<0.002	mg/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.002	<0.002										<0.002	mg/kg	TM15/PM10
Chloromethane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Vinyl Chloride	<0.002	<0.002										<0.002	mg/kg	TM15_A/PM10
Bromomethane	<0.001	<0.001										<0.001	mg/kg	TM15/PM10
Chloroethane #	<0.002	<0.002										<0.002	mg/kg	TM15/PM10
Trichlorofluoromethane #	<0.002	<0.002										<0.002	mg/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<0.006	<0.006										<0.006	mg/kg	TM15/PM10
Dichloromethane (DCM) #	<0.03	<0.03										<0.03	mg/kg	TM15/PM10
trans-1-2-Dichloroethene #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
1,1-Dichloroethane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
cis-1-2-Dichloroethene #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
2,2-Dichloropropane	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
Bromochloromethane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Chloroform #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
1,1,1-Trichloroethane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
1,1-Dichloropropene #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Carbon tetrachloride #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
1,2-Dichloroethane #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
Benzene #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Trichloroethene (TCE) #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
1,2-Dichloropropane #	<0.006	<0.006										<0.006	mg/kg	TM15/PM10
Dibromomethane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Bromodichloromethane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
cis-1-3-Dichloropropene	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
Toluene #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
trans-1-3-Dichloropropene	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
1,1,2-Trichloroethane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Tetrachloroethene (PCE) #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
1,3-Dichloropropane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Dibromochloromethane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
1,2-Dibromoethane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Chlorobenzene #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Ethylbenzene #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
p/m-Xylene #	<0.005	<0.005										<0.005	mg/kg	TM15/PM10
o-Xylene #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Styrene	<0.003	<0.003										<0.003	mg/kg	TM15_A/PM10
Bromoform	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Isopropylbenzene #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
Bromobenzene	<0.002	<0.002										<0.002	mg/kg	TM15/PM10
1,2,3-Trichloropropane #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
Propylbenzene #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
2-Chlorotoluene	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
4-Chlorotoluene	<0.003	<0.003										<0.003	mg/kg	TM15/PM10
tert-Butylbenzene #	<0.005	<0.005										<0.005	mg/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<0.006	0.008										<0.006	mg/kg	TM15/PM10
sec-Butylbenzene #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
4-Isopropyltoluene #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
1,3-Dichlorobenzene #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
1,4-Dichlorobenzene #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
n-Butylbenzene #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
1,2-Dichlorobenzene #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<0.007	<0.007										<0.007	mg/kg	TM15/PM10
Hexachlorobutadiene	<0.004	<0.004										<0.004	mg/kg	TM15/PM10
Naphthalene	<0.027	0.200										<0.027	mg/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<0.007	<0.007										<0.007	mg/kg	TM15/PM10
Surrogate Recovery Toluene D8	108	92										<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	120	89										<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/1550	1	WS103-0.60-0.70-20180130	0.60-0.70	3	06/02/2018	**General Description (Bulk Analysis)**	Soil/Stone
					06/02/2018	**Asbestos Fibres**	NAD
					06/02/2018	**Asbestos Fibres (2)**	NAD
					06/02/2018	**Asbestos ACM**	NAD
					06/02/2018	**Asbestos ACM (2)**	NAD
					06/02/2018	**Asbestos Type**	NAD
					06/02/2018	**Asbestos Type (2)**	NAD
					06/02/2018	**Asbestos Level Screen**	NAD
18/1550	1	WS103-1.60-1.70-20180130	1.60-1.70	6	06/02/2018	**General Description (Bulk Analysis)**	Soil/Stone
					06/02/2018	**Asbestos Fibres**	NAD
					06/02/2018	**Asbestos Fibres (2)**	NAD
					06/02/2018	**Asbestos ACM**	NAD
					06/02/2018	**Asbestos ACM (2)**	NAD
					06/02/2018	**Asbestos Type**	NAD
					06/02/2018	**Asbestos Type (2)**	NAD
					06/02/2018	**Asbestos Level Screen**	NAD
18/1550	1	WS101-0.30-0.40-20180130	0.30-0.40	9	06/02/2018	**General Description (Bulk Analysis)**	Soil/Stone
					06/02/2018	**Asbestos Fibres**	Fibre Bundles
					06/02/2018	**Asbestos ACM**	NAD
					06/02/2018	**Asbestos Type**	Chrysotile
					06/02/2018	**Asbestos Level Screen**	less than 0.1%
18/1550	1	WS102-1.60-1.70-20180130	1.60-1.70	15	06/02/2018	**General Description (Bulk Analysis)**	soil/stones
					06/02/2018	**Asbestos Fibres**	NAD
					06/02/2018	**Asbestos Fibres (2)**	NAD
					06/02/2018	**Asbestos ACM**	NAD
					06/02/2018	**Asbestos ACM (2)**	NAD
					06/02/2018	**Asbestos Type**	NAD
					06/02/2018	**Asbestos Type (2)**	NAD
					06/02/2018	**Asbestos Level Screen**	NAD
18/1550	1	WS104-2.30-2.40-20180131	2.30-2.40	18	06/02/2018	**General Description (Bulk Analysis)**	soil/stones
					06/02/2018	**Asbestos Fibres**	NAD
					06/02/2018	**Asbestos Fibres (2)**	NAD
					06/02/2018	**Asbestos ACM**	NAD
					06/02/2018	**Asbestos ACM (2)**	NAD
					06/02/2018	**Asbestos Type**	NAD

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/1550	1	WS104-2.30-2.40-20180131	2.30-2.40	18	06/02/2018	**Asbestos Type (2)**	NAD
					06/02/2018	**Asbestos Level Screen**	NAD
18/1550	1	WS106-0.50-0.60-20180131	0.50-0.60	21	06/02/2018	**General Description (Bulk Analysis)**	soil/stones
					06/02/2018	**Asbestos Fibres**	Fibre Bundles
					06/02/2018	**Asbestos ACM**	NAD
					06/02/2018	**Asbestos Type**	Chrysotile
					06/02/2018	**Asbestos Level Screen**	less than 0.1%
18/1550	1	WS105-3.00-3.10-20180131	3.00-3.10	24	06/02/2018	**General Description (Bulk Analysis)**	soil/sand
					06/02/2018	**Asbestos Fibres**	NAD
					06/02/2018	**Asbestos Fibres (2)**	NAD
					06/02/2018	**Asbestos ACM**	NAD
					06/02/2018	**Asbestos ACM (2)**	NAD
					06/02/2018	**Asbestos Type**	NAD
					06/02/2018	**Asbestos Type (2)**	NAD
					06/02/2018	**Asbestos Level Screen**	NAD

Client Name: Arcadis **Matrix : Solid**
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
18/1550	1	WS101-0.30-0.40-20180130	0.30-0.40	7-9	Asbestos detected in sample
18/1550	1	WS106-0.50-0.60-20180131	0.50-0.60	19-21	Asbestos detected in sample

Client Name: Arcadis
Reference: 10016750
Location: Pioneer Park
Contact: Jonathan Harris

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 18/1550						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/1550

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 18/1550

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

JE Job No: 18/1550

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes

JE Job No: 18/1550

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM61	As received solid samples are extracted with hot water in a 20:1 ratio of water to soil ready for analysis by ICP.			AR	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.			AR	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM106	Determination of Sulphide by Skalar Continuous Flow Analyser	PM119	As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis.			AR	Yes
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AR	Yes

JE Job No: 18/1550

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM179	Determination of Glycols using LCMS	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AR	Yes
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Zone 3
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Arcadis
Part 3rd Floor
Charter House
62-68 Hills Road
Cambridge
Cambridgeshire
CB2 1LA

Attention :	Jon Harris
Date :	13th February, 2018
Your reference :	10016750
Our reference :	Test Report 18/1764 Batch 1
Location :	LCC-HCA
Date samples received :	7th February, 2018
Status :	Final report
Issue :	1

One sample were received for analysis on 7th February, 2018 of which one were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Boden BSc
Project Manager

Client Name: Arcadis
Reference: 10016750
Location: LCC-HCA
Contact: Jon Harris
JE Job No.: 18/1764

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

J E Sample No.	1-5										LOD/LOR	Units	Method No.
Sample ID	01WS1040502 18WG1115												
Depth													
COC No / misc													
Containers	V P G												
Sample Date	05/02/2018 11:15												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	07/02/2018												
Dissolved Arsenic #	7.4										<2.5	ug/l	TM30/PM14
Dissolved Barium #	39										<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5										<0.5	ug/l	TM30/PM14
Dissolved Boron	757										<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5										<0.5	ug/l	TM30/PM14
Dissolved Calcium #	304_{AA}										<0.2	mg/l	TM30/PM14
Total Dissolved Chromium #	<1.5										<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7										<7	ug/l	TM30/PM14
Dissolved Lead #	<5										<5	ug/l	TM30/PM14
Dissolved Mercury #	<1										<1	ug/l	TM30/PM14
Dissolved Nickel #	7										<2	ug/l	TM30/PM14
Dissolved Selenium #	<3										<3	ug/l	TM30/PM14
Dissolved Vanadium #	<1.5										<1.5	ug/l	TM30/PM14
Dissolved Zinc #	<3										<3	ug/l	TM30/PM14
PAH MS													
Naphthalene #	0.2										<0.1	ug/l	TM4/PM30
Acenaphthylene #	0.054										<0.013	ug/l	TM4/PM30
Acenaphthene #	0.072										<0.013	ug/l	TM4/PM30
Fluorene #	0.044										<0.014	ug/l	TM4/PM30
Phenanthrene #	0.373										<0.011	ug/l	TM4/PM30
Anthracene #	0.159										<0.013	ug/l	TM4/PM30
Fluoranthene #	0.721										<0.012	ug/l	TM4/PM30
Pyrene #	0.795										<0.013	ug/l	TM4/PM30
Benzo(a)anthracene #	0.305										<0.015	ug/l	TM4/PM30
Chrysene #	0.302										<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	0.701										<0.018	ug/l	TM4/PM30
Benzo(a)pyrene #	0.405										<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene #	0.305										<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	0.04										<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene #	0.284										<0.011	ug/l	TM4/PM30
PAH 16 Total #	4.760										<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	0.51										<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	0.20										<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	85										<0	%	TM4/PM30
Methyl Tertiary Butyl Ether #	<0.1										<0.1	ug/l	TM15/PM10
Benzene #	<0.5										<0.5	ug/l	TM15/PM10
Toluene #	<5										<5	ug/l	TM15/PM10
Ethylbenzene #	<1										<1	ug/l	TM15/PM10
p/m-Xylene #	<2										<2	ug/l	TM15/PM10
o-Xylene #	4										<1	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	97										<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	108										<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: LCC-HCA
Contact: Jon Harris
JE Job No.: 18/1764

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

J E Sample No.	1-5												
Sample ID	01WS1040502 18WG1115												
Depth													
COC No / misc													
Containers	V P G												
Sample Date	05/02/2018 11:15												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	07/02/2018												

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	11										<10	ug/l	TM36/PM12
>C6-C8 #	<10										<10	ug/l	TM36/PM12
>C8-C10 #	36										<10	ug/l	TM36/PM12
>C10-C12 #	<5										<5	ug/l	TM5/PM30
>C12-C16 #	<10										<10	ug/l	TM5/PM30
>C16-C21 #	<10										<10	ug/l	TM5/PM30
>C21-C35 #	<10										<10	ug/l	TM5/PM30
Total aliphatics C5-35 #	47										<10	ug/l	TM5/TM36/PM30/PM12
Aromatics													
>C5-EC7 #	<10										<10	ug/l	TM36/PM12
>EC7-EC8 #	<10										<10	ug/l	TM36/PM12
>EC8-EC10 #	<10										<10	ug/l	TM36/PM12
>EC10-EC12 #	<5										<5	ug/l	TM5/PM30
>EC12-EC16 #	<10										<10	ug/l	TM5/PM30
>EC16-EC21 #	<10										<10	ug/l	TM5/PM30
>EC21-EC35 #	<10										<10	ug/l	TM5/PM30
Total aromatics C5-35 #	<10										<10	ug/l	TM5/TM36/PM30/PM12
Total aliphatics and aromatics(C5-35) #	47										<10	ug/l	TM5/TM36/PM30/PM12
Total Phenols HPLC	<0.1										<0.1	mg/l	TM26/PM0
Fluoride	<0.3										<0.3	mg/l	TM173/PM0
Sulphate as SO4 #	230										<0.5	mg/l	TM38/PM0
Nitrate as NO3 #	1.6										<0.2	mg/l	TM38/PM0
Nitrite as NO2 #	<0.02										<0.02	mg/l	TM38/PM0
Monoethylene glycol	<10										<10	ug/l	TM179/PM0
Propylene glycol	<50 AA										<10	ug/l	TM179/PM0
Diethylene glycol	<10										<10	ug/l	TM179/PM0
Triethylene glycol	<10										<10	ug/l	TM179/PM0
Thiodiglycol	<10										<10	ug/l	TM179/PM0
Free Cyanide #	<0.01										<0.01	mg/l	TM89/PM0
Total Cyanide #	<0.01										<0.01	mg/l	TM89/PM0
Hexavalent Chromium	<6										<6	ug/l	TM38/PM0
Total Dissolved Chromium III	<6										<6	ug/l	NONE/NONE
Sulphide	<10										<10	ug/l	TM106/PM0
Dissolved Organic Carbon #	NDP										<2	mg/l	TM60/PM0

Exova Jones Environmental

Client Name: Arcadis
Reference: 10016750
Location: LCC-HCA
Contact: Jon Harris
JE Job No.: 18/1764

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

J E Sample No.	1-5												
Sample ID	01WS1040502 18WG1115												
Depth													
COC No / misc													
Containers	V P G												
Sample Date	05/02/2018 11:15												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	07/02/2018												
Faecal Coliforms*	NDP											MPN/100ml	Subcontracted
pH #	NDP										<0.01	pH units	TM73/PM0
Total Organic Carbon #	4										<2	mg/l	TM60/PM0
Total Coliforms*	NDP											MPN/100ml	Subcontracted

Please see attached notes for all abbreviations and acronyms

Client Name: Arcadis
Reference: 10016750
Location: LCC-HCA
Contact: Jon Harris
JE Job No.: 18/1764

SVOC Report : **Liquid**

J E Sample No.	1-5												
Sample ID	01WS1040502 18WG1115												
Depth													
COC No / misc													
Containers	V P G												
Sample Date	05/02/2018 11:15												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	07/02/2018												

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<1										<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5										<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5										<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5										<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1										<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5										<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1										<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5										<0.5	ug/l	TM16/PM30
4-Methylphenol	<1										<1	ug/l	TM16/PM30
4-Nitrophenol	<10										<10	ug/l	TM16/PM30
Pentachlorophenol	<1										<1	ug/l	TM16/PM30
Phenol	<1										<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	<1										<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1										<1	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<5										<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1										<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	5.3										<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1										<1	ug/l	TM16/PM30
Diethyl phthalate #	59										<1	ug/l	TM16/PM30
Dimethyl phthalate	<1										<1	ug/l	TM16/PM30
Other SVOCs													
1,2-Dichlorobenzene #	<1										<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1										<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1										<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1										<1	ug/l	TM16/PM30
2-Nitroaniline	<1										<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5										<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1										<1	ug/l	TM16/PM30
3-Nitroaniline	<1										<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1										<1	ug/l	TM16/PM30
4-Chloroaniline	<1										<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1										<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5										<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5										<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5										<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1										<1	ug/l	TM16/PM30
Carbazole #	<0.5										<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5										<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1										<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1										<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1										<1	ug/l	TM16/PM30
Hexachloroethane #	<1										<1	ug/l	TM16/PM30
Isophorone #	<0.5										<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5										<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1										<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	113										<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	123										<0	%	TM16/PM30

Client Name: Arcadis
Reference: 10016750
Location: LCC-HCA
Contact: Jon Harris
JE Job No.: 18/1764

VOC Report : **Liquid**

J E Sample No.	1-5												
Sample ID	01WS1040502 18WG1115												
Depth													
COC No / misc													
Containers	V P G												
Sample Date	05/02/2018 11:15												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	07/02/2018												

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2										<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1										<0.1	ug/l	TM15/PM10
Chloromethane #	<3										<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1										<0.1	ug/l	TM15/PM10
Bromomethane	<1										<1	ug/l	TM15/PM10
Chloroethane #	<3										<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3										<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3										<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<5										<5	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3										<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3										<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3										<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1										<1	ug/l	TM15/PM10
Bromochloromethane #	<2										<2	ug/l	TM15/PM10
Chloroform #	<2										<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2										<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3										<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2										<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2										<2	ug/l	TM15/PM10
Benzene #	<0.5										<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3										<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2										<2	ug/l	TM15/PM10
Dibromomethane #	<3										<3	ug/l	TM15/PM10
Bromodichloromethane #	<2										<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2										<2	ug/l	TM15/PM10
Toluene #	<5										<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2										<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2										<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3										<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2										<2	ug/l	TM15/PM10
Dibromochloromethane #	<2										<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2										<2	ug/l	TM15/PM10
Chlorobenzene #	<2										<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2										<2	ug/l	TM15/PM10
Ethylbenzene #	<1										<1	ug/l	TM15/PM10
p/m-Xylene #	<2										<2	ug/l	TM15/PM10
o-Xylene #	4										<1	ug/l	TM15/PM10
Styrene	<2										<2	ug/l	TM15/PM10
Bromoform #	<2										<2	ug/l	TM15/PM10
Isopropylbenzene #	<3										<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4										<4	ug/l	TM15/PM10
Bromobenzene #	<2										<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3										<3	ug/l	TM15/PM10
Propylbenzene #	<3										<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3										<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	13										<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3										<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3										<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3										<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3										<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3										<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3										<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3										<3	ug/l	TM15/PM10
n-Butylbenzene #	<3										<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3										<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2										<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3										<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3										<3	ug/l	TM15/PM10
Naphthalene	<2										<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3										<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	97										<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	108										<0	%	TM15/PM10

Client Name: Arcadis
Reference: 10016750
Location: LCC-HCA
Contact: Jon Harris

Matrix : Liquid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
18/1764	1	01WS104050218WG1115		1-5	Insufficient sample for test

Client Name: Arcadis
Reference: 10016750
Location: LCC-HCA
Contact: Jon Harris

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 18/1764						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/1764

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

JE Job No: 18/1764

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM30/PM12	CWG GC-FID	Yes			
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.				

JE Job No: 18/1764

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.				
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes			
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.	Yes			
TM106	Determination of Sulphide by Skalar Continuous Flow Analyser	PM0	No preparation is required.				
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.				
TM179	Determination of Glycols using LCMS	PM0	No preparation is required.				

JE Job No: 18/1764

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	NONE	No Method Code				
Subcontracted	Subcontracted analysis, sent to an ISO 17025 accredited laboratory where possible.						

APPENDIX H

Geotechnical Laboratory Test Data

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/02/2018

0998

Contract	**HCA Land at Pioneer Park**
Serial No.	**S32533**

Client:

Arcadis (UK) Limited

2 Craven Court
Willie Snaith Road
Newmarket
Suffolk
CB8 7FA

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way,
Stukeley Meadows, Huntingdon,
Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Arcadis (UK) Limited

Samples Labelled:

HCA Land at Pioneer Park

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** — Technical Director
- ☐ **S.P. Townend FGS** — Quality Manager
- ☐ **W. Johnstone** — Materials Lab Manager
- ☐ **D. Sabnis** — Operations Manager

Date Received: 31/01/2018

Samples Tested Between: 31/01/2018 **and** 15/02/2018

Remarks:

For the attention of Mr J Harris
Your Reference No: 10016750

Notes:

1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2 (a) UKAS - United Kingdom Accreditation Service
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/02/2018

0998

Contract	**HCA Land at Pioneer Park**		
Serial No.	**S32533**	**Target Date**	14/02/2018
Scheduled By	Arcadis (UK) Limited		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	PSD by Wet Sieve	PSD by Hydrometer	PSD by Wet Sieve & Hydro	Water Content BSEN	Liquid/Plastic Limits	Wet Sieve Preparation												Sample Remarks
TP101	B	5	1.10		1																
TP101	B	6	3.80	1																	
TP102	B	9	2.00	1																	
TP103	B	11	1.60	1																	
TP104	D	2	3.00		1		1	1													
TP105	B	3	2.50	1																	
TP106	D	13	1.50				1	1	1												
TP107	B	15	2.00	1																	
TP108	D	16	1.30				1	1	1												
TP108	B	17	1.50			1															
TP109	B	19	1.70	1																	
TP110	B	23	2.40	1																	
TP111	D	22	2.00				1	1	1												
TP112	B	21	3.50	1																	
TP113	D	20	2.00				1	1													
Totals				**8**	**2**	**1**	**5**	**5**	**3**												**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/02/2018

0998

Contract	**HCA Land at Pioneer Park**
Serial No.	**S32533**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
TP104	3.00 - 3.10	D	2	**14.4**	29	13	16	0.09	From Natural	2 (A)	15.4*	26	Stiff orangish brown slightly gravelly sandy silty CLAY with rare black speckling. Gravel is fine angular flint	CL
TP106	1.50 - 1.60	D	13	**17.1**	24	17	7	0.01	Wet Sieved	12 (M)	19.4*	26	Firm yellowish brown slightly gravelly sandy silty CLAY. Gravel is fine and medium flint	CL
TP108	1.30 - 1.40	D	16	**34.0**	42	23	19	0.58	Wet Sieved	50 (M)	67.9*	26	Very soft yellowish brown slightly gravelly sandy silty CLAY. Gravel is fine to coarse angular to subrounded flint, quartz and claystone	CI
TP111	2.00 - 2.10	D	22	**24.0**	33	21	12	0.25	Wet Sieved	15 (M)	28.3*	26	Firm yellowish brown and greyish brown slightly gravelly slightly sandy silty CLAY possibly locally slightly organic. Gravel is fine and medium flint	CL
TP113	2.00 - 2.10	D	20	**63.6**	73	44	29	0.68	From Natural	0 (A)		27	Friable pale olive and grey clayey SILT with rare black organic pockets and recently active and decayed roots	MV

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377:Part 2:1990:3.2, 4.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990: Clause 3 Note 1

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

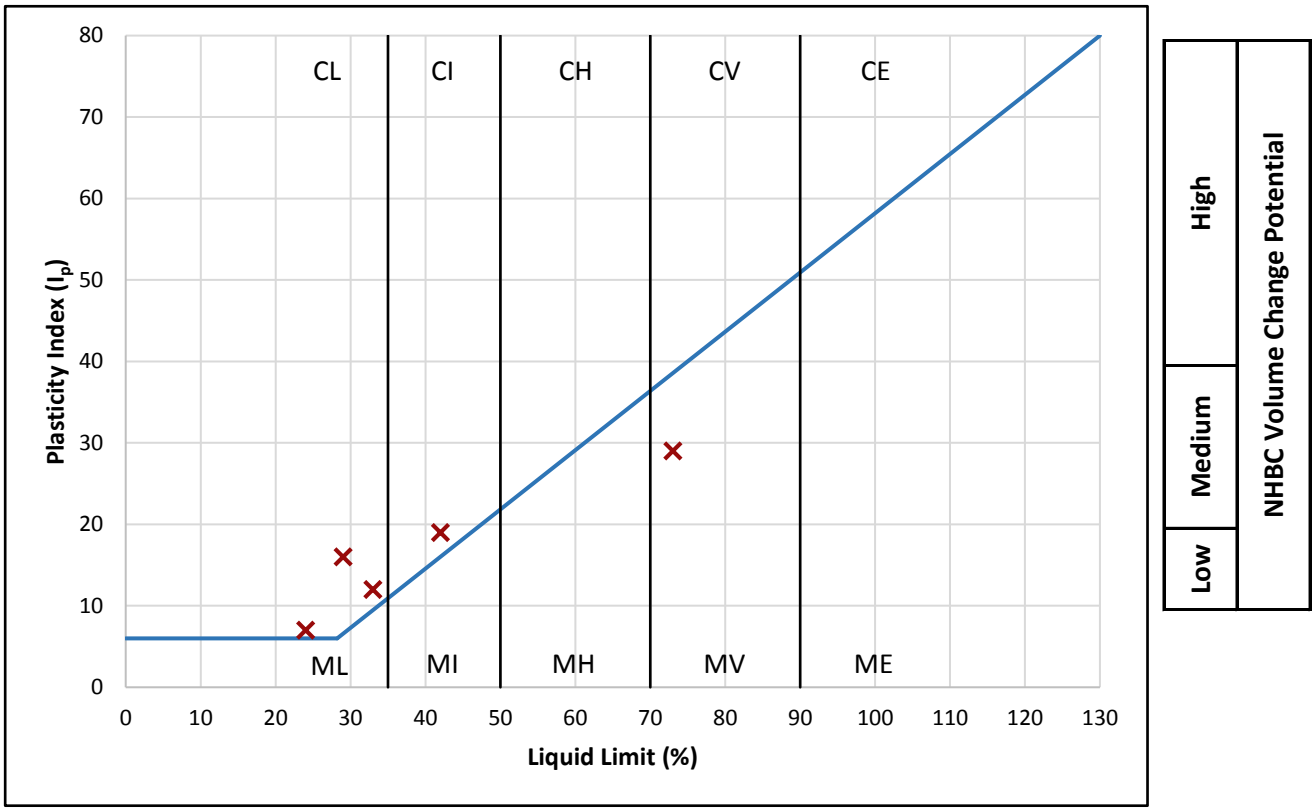
DATE ISSUED: 15/02/2018

0998

Contract	**HCA Land at Pioneer Park**
Serial No.	**S32533**

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/02/2018

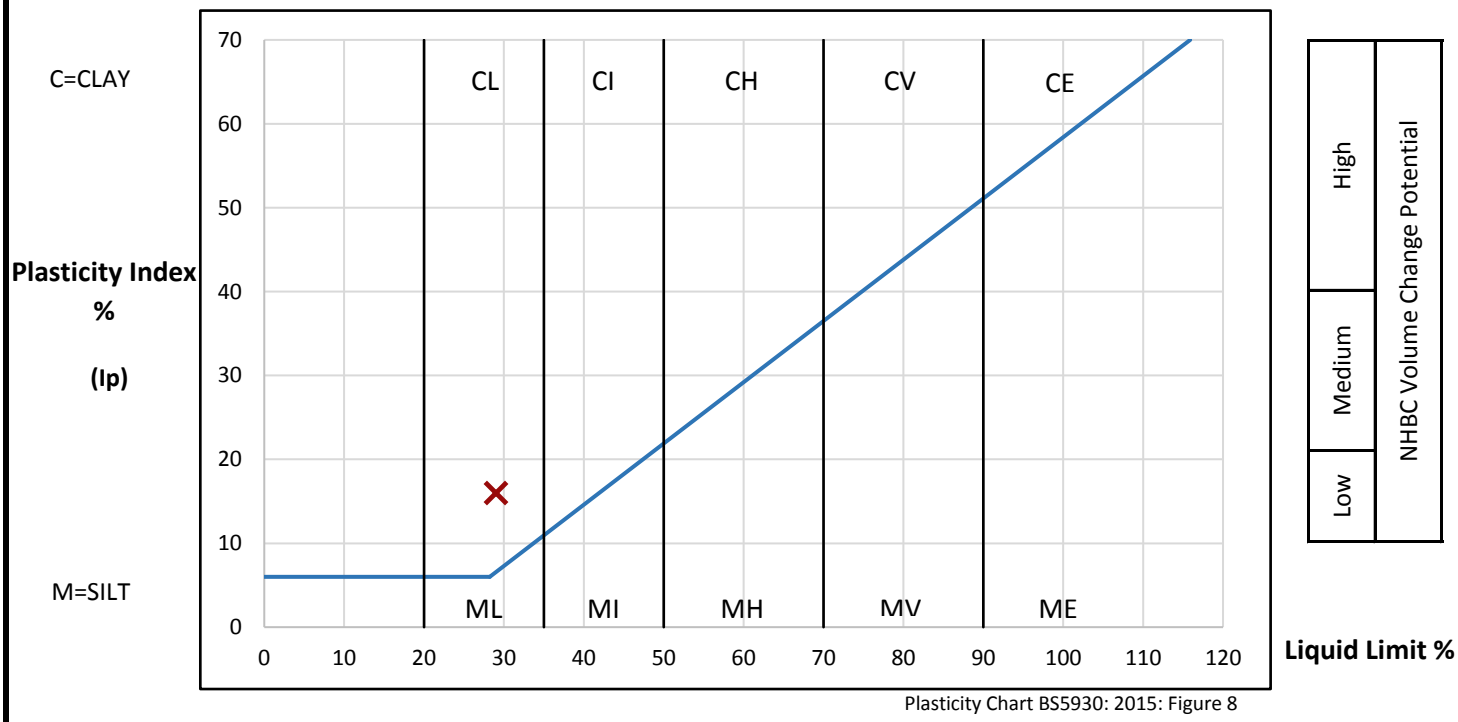
0998

Contract	**HCA Land at Pioneer Park**
Serial No.	**S32533**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP104	3.00 - 3.10	D	2	14.4	Stiff orangish brown slightly gravelly sandy silty CLAY with rare black speckling. Gravel is fine angular flint	

PREPARATION				Liquid Limit	29 %
Method of preparation	From natural/gravel picked out by hand			Plastic Limit	13 %
Sample retained 0.425mm sieve	(Approximate)	2 %		Plasticity Index	16 %
Corrected water content for material passing 0.425mm		15.4 %		Liquidity Index	0.09
Sample retained 2mm sieve	(Approximate)	2 %		NHBC Modified (I'p)	n/a
Curing time	26 hrs	Clay Content	25 %	Derived Activity	0.64



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/02/2018

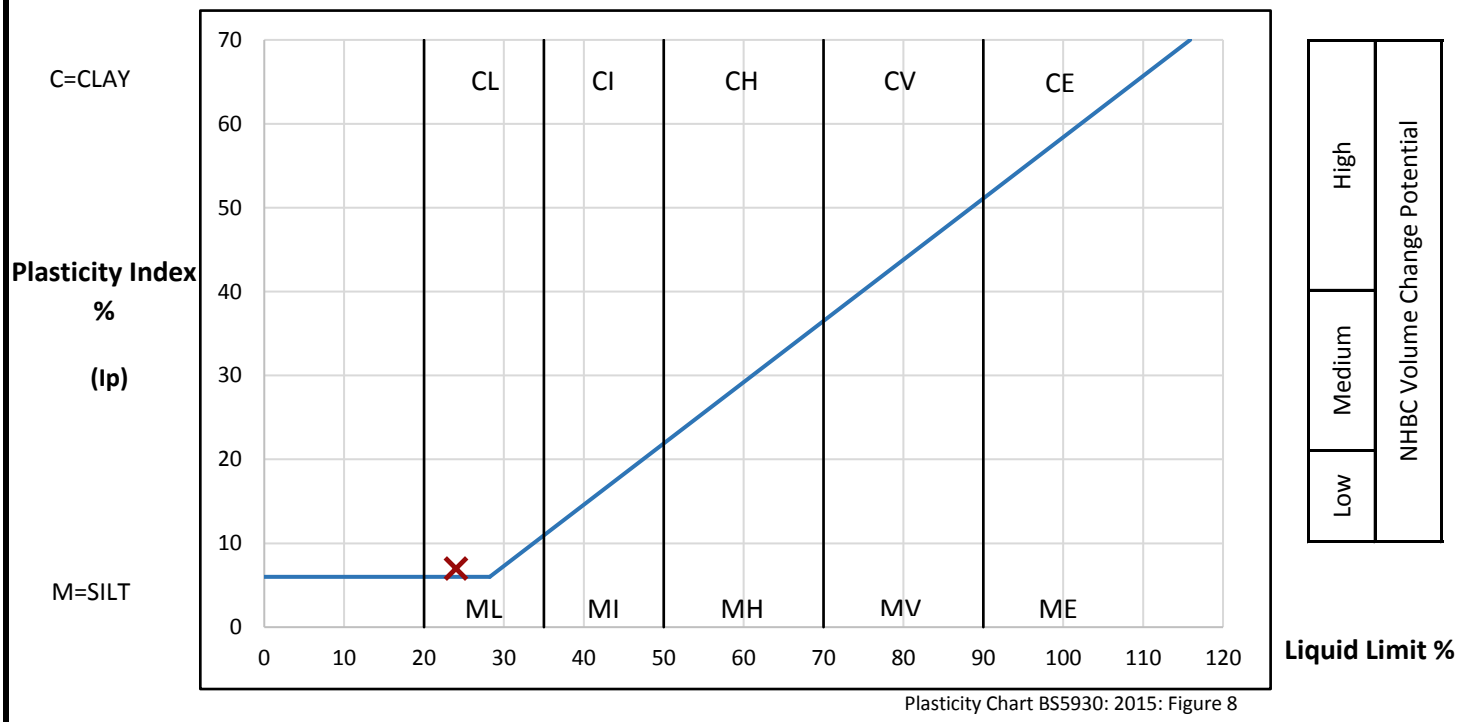
0998

Contract	**HCA Land at Pioneer Park**
Serial No.	**S32533**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP106	1.50 - 1.60	D	13	17.1	Firm yellowish brown slightly gravelly sandy silty CLAY. Gravel is fine and medium flint	

PREPARATION				Liquid Limit	24 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	12 %		Plasticity Index	7 %
Corrected water content for material passing 0.425mm		19.4 %		Liquidity Index	0.01
Sample retained 2mm sieve	(Measured)	6 %		NHBC Modified (I'p)	6 %
Curing time	26 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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Contract	**HCA Land at Pioneer Park**
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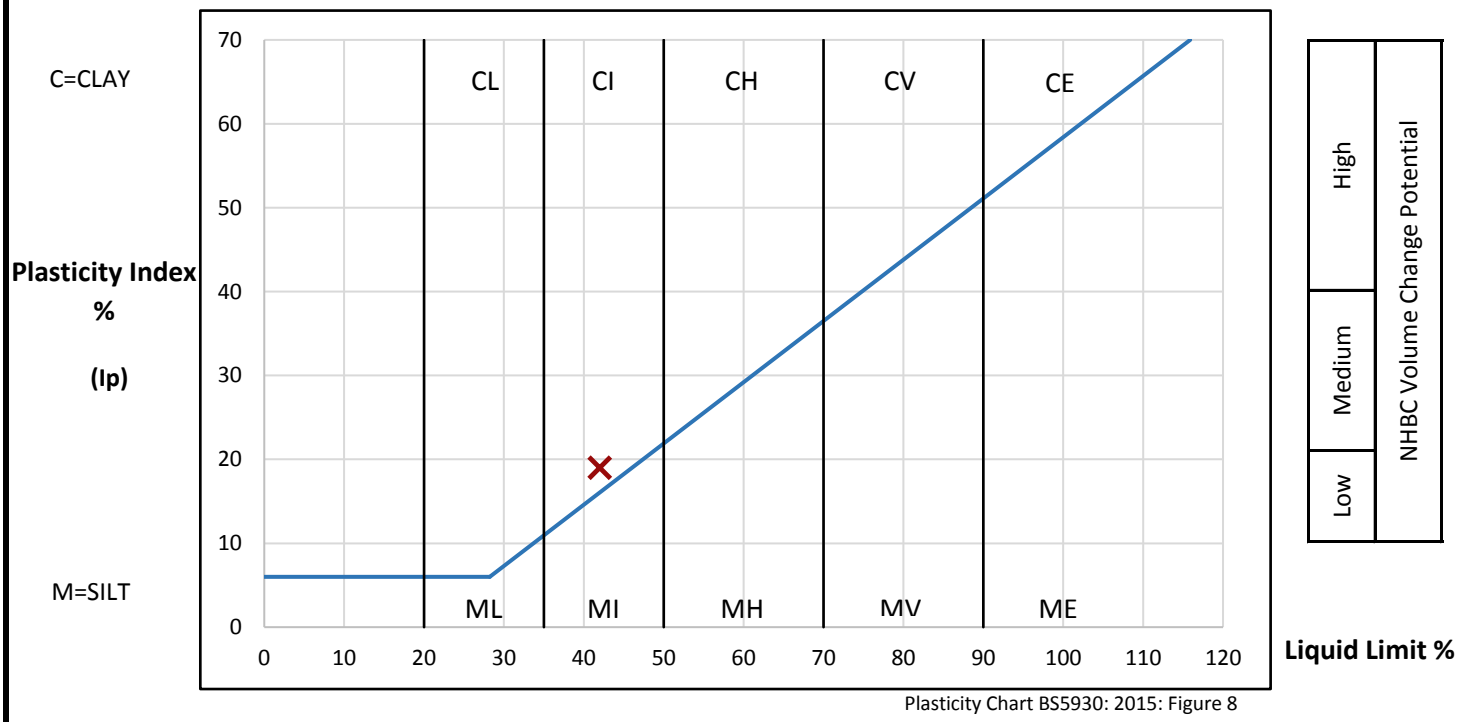
DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP108	1.30 - 1.40	D	16	34.0	Very soft yellowish brown slightly gravelly sandy silty CLAY. Gravel is fine to coarse angular to subrounded flint, quartz and claystone	

PREPARATION				Liquid Limit	42 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	23 %
Sample retained 0.425mm sieve	(Measured)	50 %		Plasticity Index	19 %
Corrected water content for material passing 0.425mm		67.9 %		Liquidity Index	0.58
Sample retained 2mm sieve	(Measured)	18 %		NHBC Modified (I'p)	10 %
Curing time	26 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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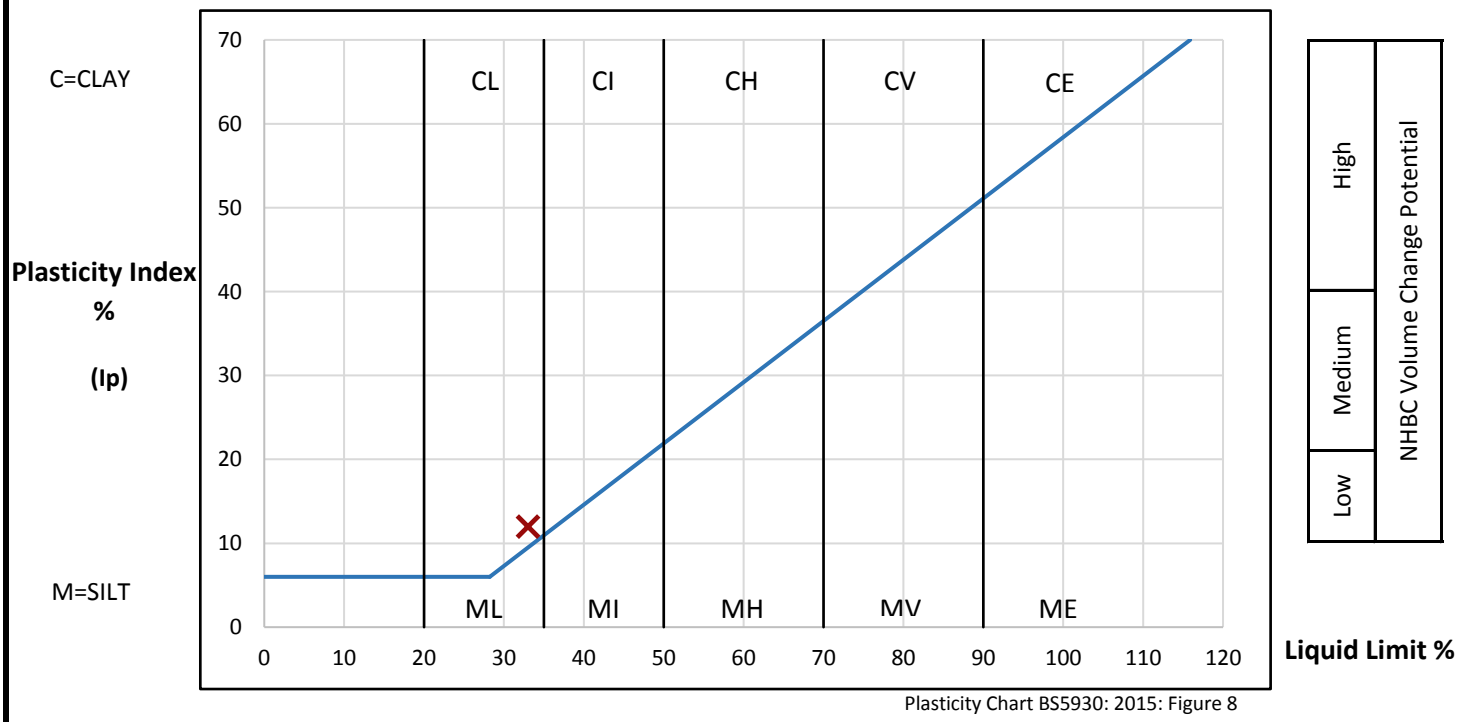
Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP111	2.00 - 2.10	D	22	24.0	Firm yellowish brown and greyish brown slightly gravelly slightly sandy silty CLAY possibly locally slightly organic. Gravel is fine and medium flint	

PREPARATION					
Method of preparation	Wet sieved over 0.425mm sieve			Liquid Limit	33 %
Sample retained 0.425mm sieve	(Measured)	15 %		Plastic Limit	21 %
Corrected water content for material passing 0.425mm		28.3 %		Plasticity Index	12 %
Sample retained 2mm sieve	(Measured)	8 %		Liquidity Index	0.25
Curing time	26 hrs	Clay Content	Not analysed	NHBC Modified (I'p)	10 %
				Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

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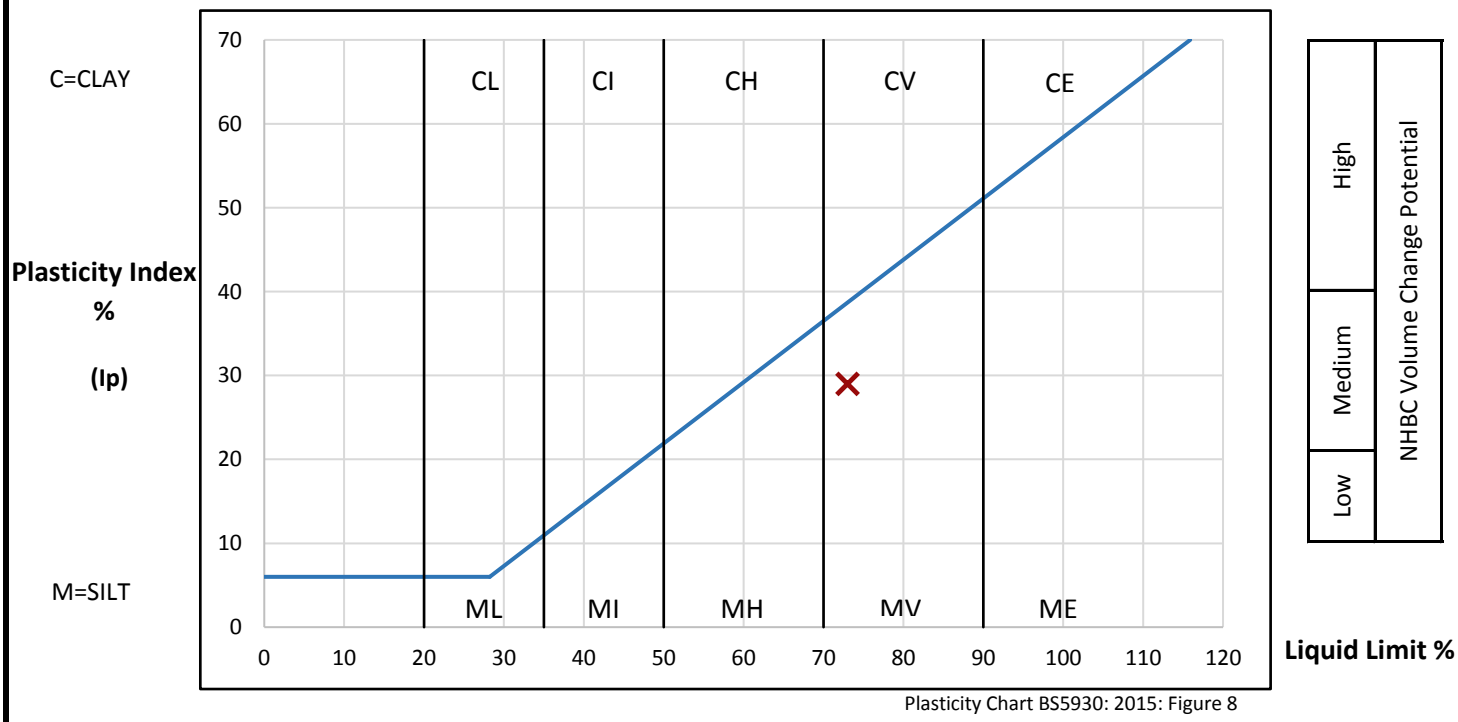
DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP113	2.00 - 2.10	D	20	63.6	Friable pale olive and grey clayey SILT with rare black organic pockets and recently active and decayed roots	

PREPARATION				Liquid Limit	73 %
Method of preparation		From natural		Plastic Limit	44 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	29 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.68
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	27 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

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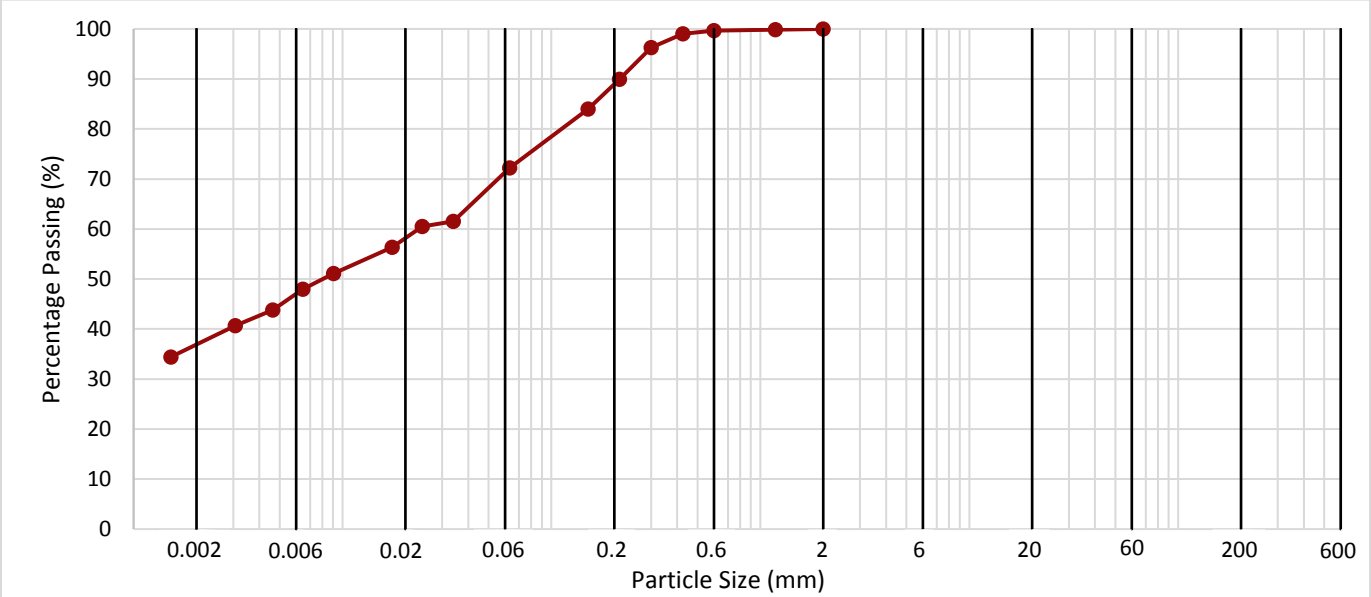
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP101	1.10 - 1.40	B	5	Firm yellowish brown slightly sandy silty CLAY	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0339	62	36
0.0240	61	
0.0173	56	
0.0091	51	Clay by Dry Mass (%)
0.0065	48	
0.0046	44	
0.0031	41	36
0.0015	34	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	28
1.18	100	
0.600	100	
0.425	99	
0.300	96	
0.212	90	
0.150	84	
0.063	72	

Fines By Dry Mass (%)	
<0.063mm	72

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: , 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

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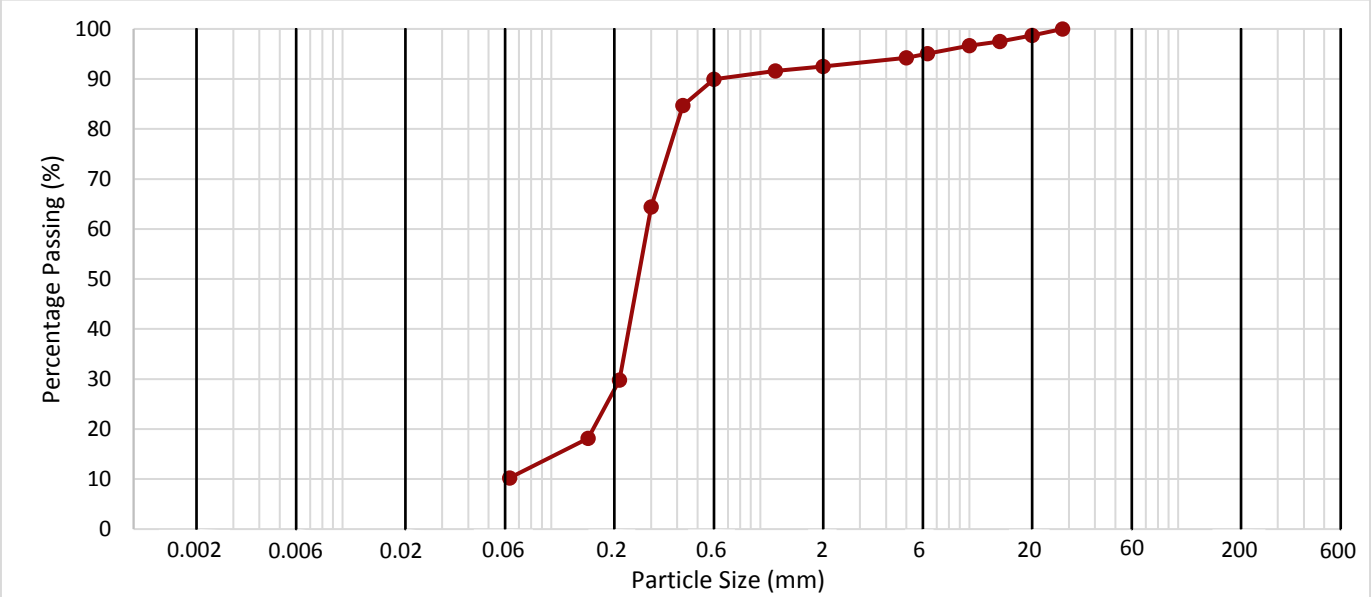
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP101	3.80 - 4.10	B	6	Yellowish brown gravelly SAND with occasional firm reddish brown and light grey silty clay lumps. Gravel is white, black and brown flint and brown, white and black rounded and subrounded quartzite	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	93	**83**
1.18	92	
0.600	90	
0.425	85	
0.300	64	
0.212	30	
0.150	18	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	**10**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**7**
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	97	
10	97	
6.3	95	
5	94	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

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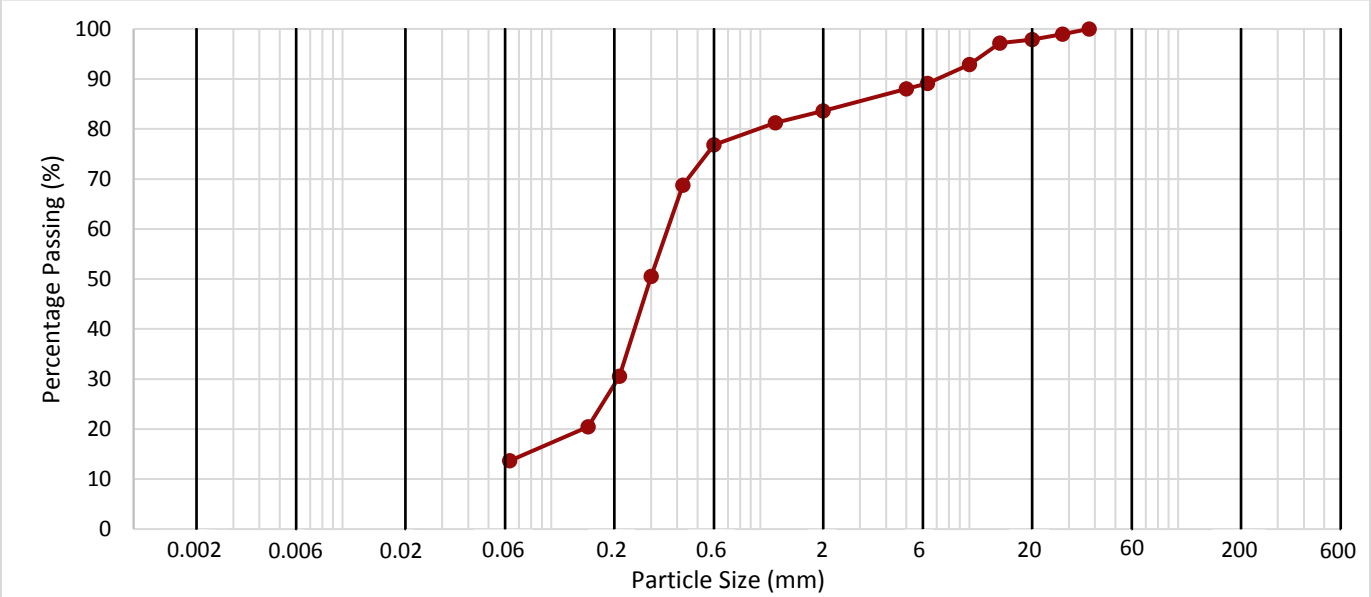
Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP102	2.00 - 2.30	B	9	Brown slightly clayey silty gravelly SAND with occasional firm sandy silty clay lumps. Gravel is brown and white angular to subrounded quartzite and rare white and brown angular flint	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	84	**70**
1.18	81	
0.600	77	
0.425	69	
0.300	51	
0.212	31	
0.150	20	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	**14**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**16**
125		
90		
63		
50		
37.5	100	
28	99	
20	98	
14	97	
10	93	
6.3	89	
5	88	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

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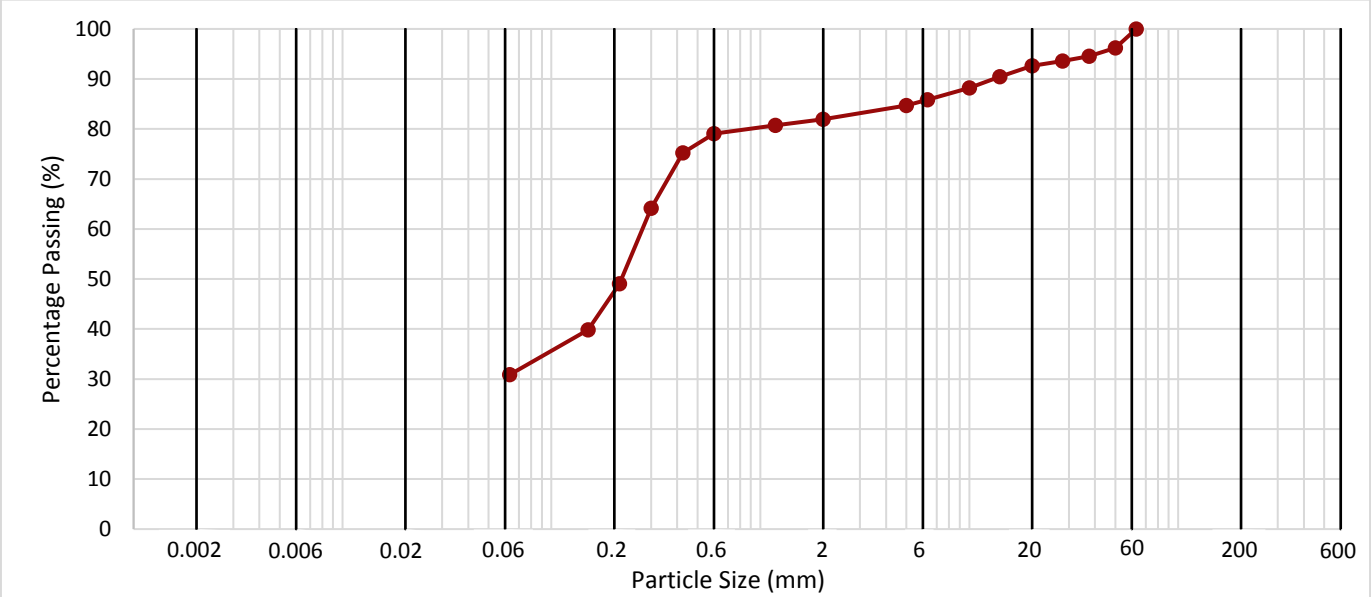
Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP103	1.60 - 1.90	B	11	Firm brown slightly gravelly sandy silty CLAY with rare brick fragments. Gravel is brown and white subrounded quartzite	Description in terms of likely engineering behaviour

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	82	**51**
1.18	81	
0.600	79	
0.425	75	
0.300	64	
0.212	49	
0.150	40	
0.063	31	

Fines By Dry Mass (%)	
<0.063mm	**31**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**18**
125		
90		
63	100	
50	96	
37.5	95	
28	94	
20	93	
14	90	
10	88	
6.3	86	
5	85	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

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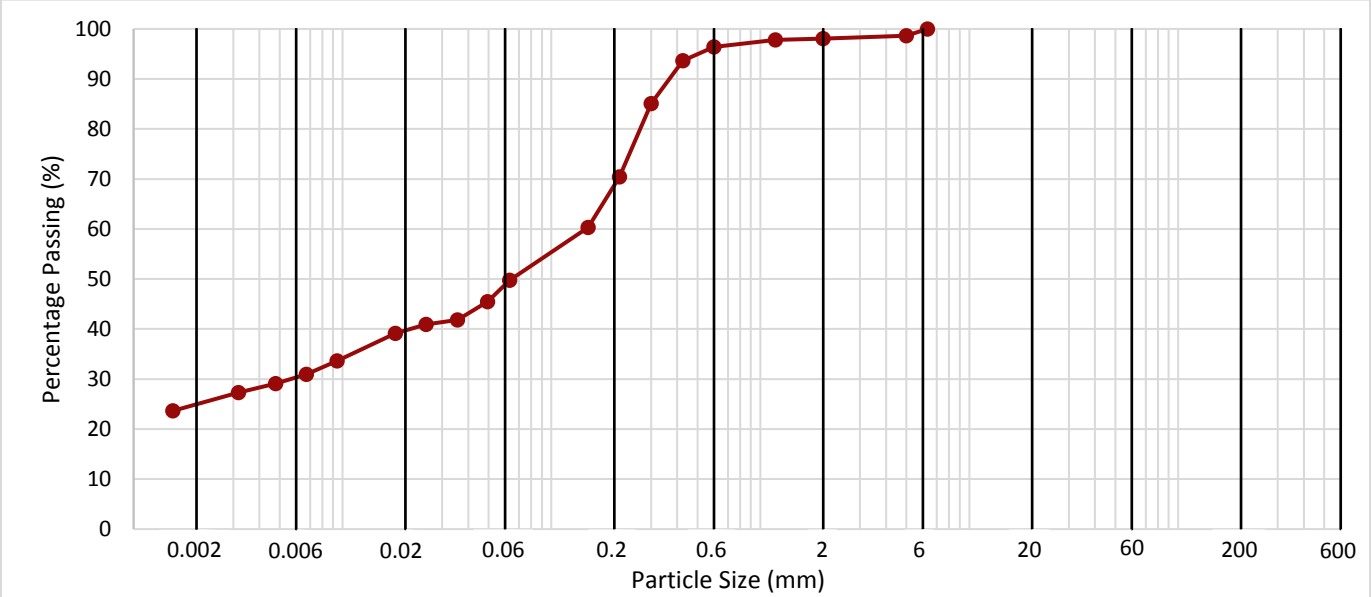
Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP104	3.00 - 3.10	D	2	Stiff orangish brown slightly gravelly sandy silty CLAY with rare black speckling. Gravel is fine angular flint	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0495	45	25
	0.0355	42	
	0.0252	41	
	0.0179	39	Clay by Dry Mass (%)
	0.0094	34	
	0.0067	31	
	0.0048	29	25
	0.0032	27	
	0.0015	24	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	48
1.18	98	
0.600	96	
0.425	94	
0.300	85	
0.212	70	
0.150	60	
0.063	50	

Fines By Dry Mass (%)	
<0.063mm	50

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: , 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
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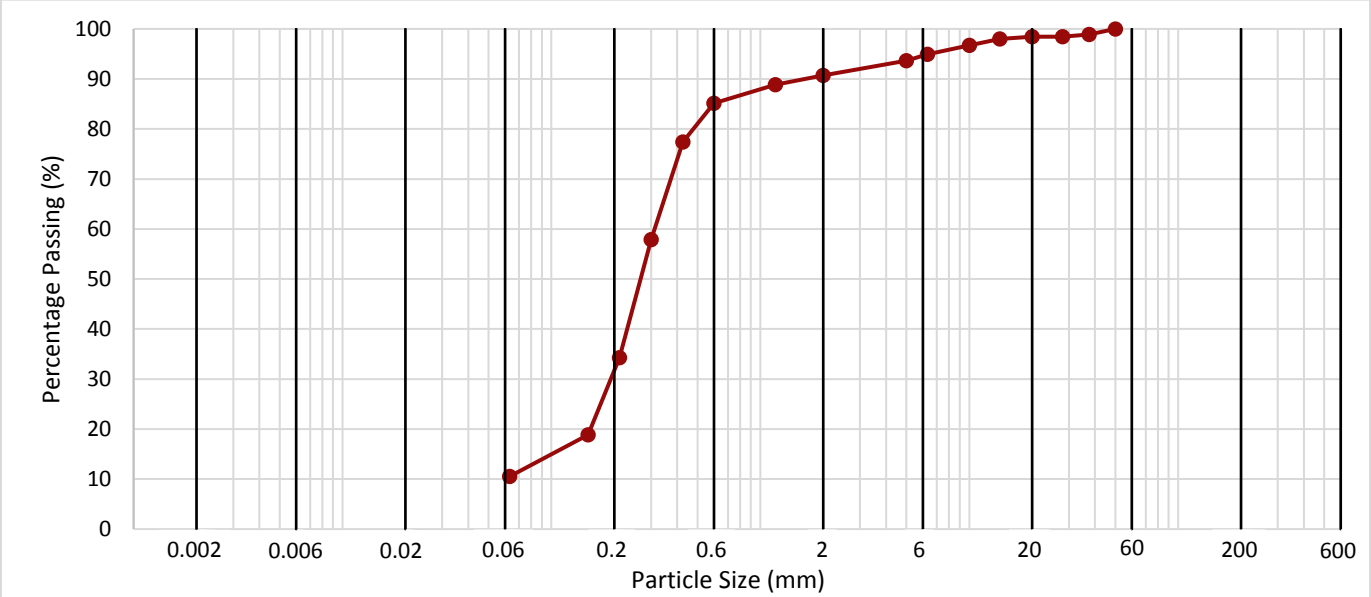
Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP105	2.50 - 2.80	B	3	Brown slightly gravelly silty SAND with occasional firm sandy clay lumps and rare brick, concrete and cinder fragments. Gravel is white and black angular flint and brown and white subrounded quartzite	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	91	80
1.18	89	
0.600	85	
0.425	77	
0.300	58	
0.212	34	
0.150	19	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		9
125		
90		
63		
50	100	
37.5	99	
28	98	
20	98	
14	98	
10	97	
6.3	95	
5	94	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

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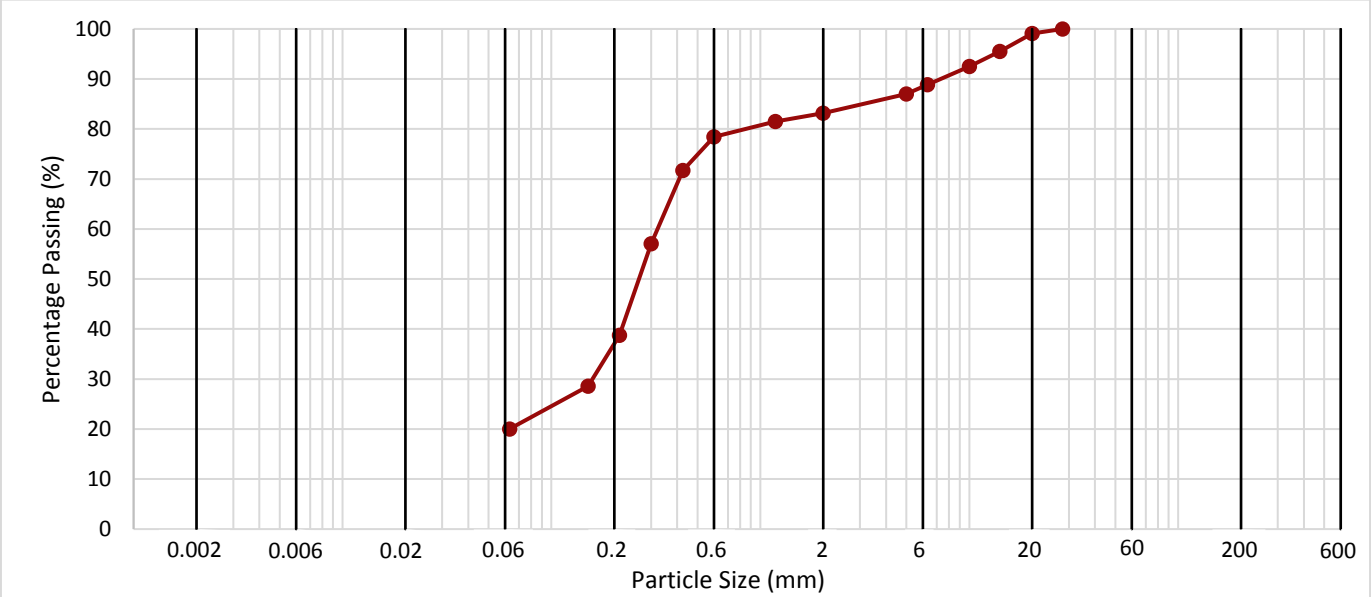
Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP107	2.00 - 2.30	B	15	Reddish brown gravelly clayey silty SAND with occasional soft sandy silty clay lumps. Gravel is white, black and brown angular flint and brown and white subrounded quartzite	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	83	**63**
1.18	82	
0.600	78	
0.425	72	
0.300	57	
0.212	39	
0.150	29	
0.063	20	

Fines By Dry Mass (%)	
<0.063mm	**20**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**17**
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	96	
10	92	
6.3	89	
5	87	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

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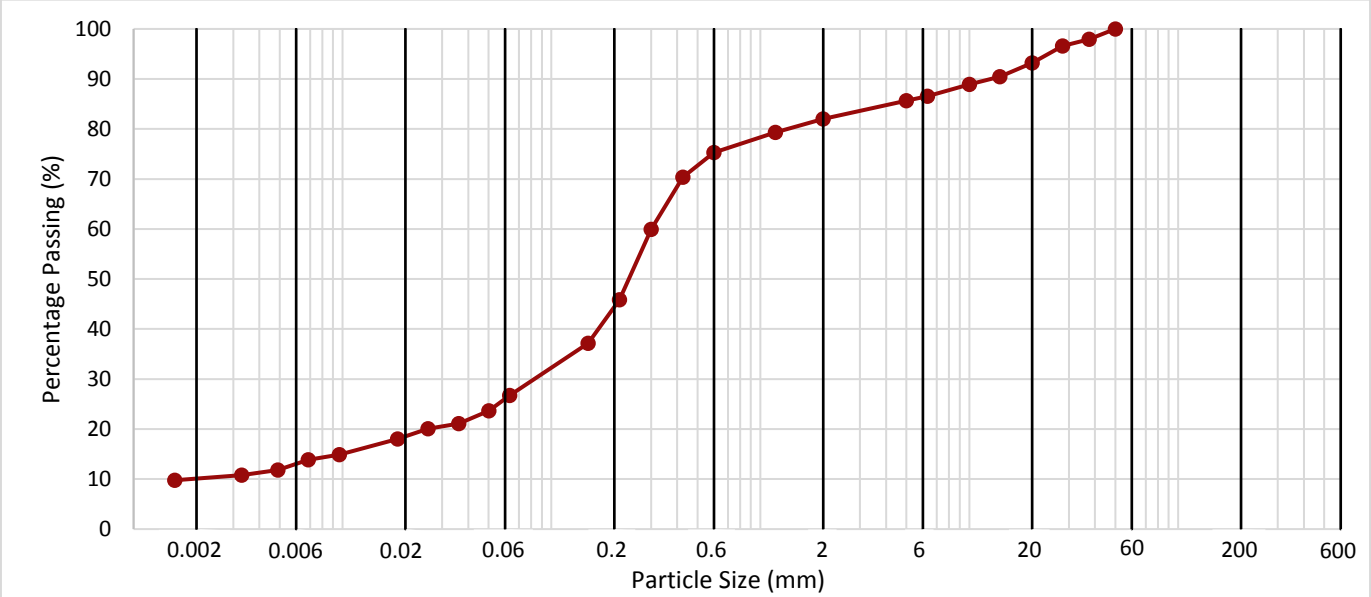
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP108	1.50 - 1.80	B	17	Firm dark brown slightly gravelly sandy silty CLAY with rare brick and asphalt fragments. Gravel is white and brown subrounded and subangular quartzite and rare white and brown angular flint	Description in terms of likely engineering behaviour

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0501	24	17
	0.0360	21	
	0.0257	20	
	0.0184	18	Clay by Dry Mass (%)
	0.0097	15	
	0.0069	14	
	0.0049	12	10
	0.0033	11	
	0.0016	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	82	55
1.18	79	
0.600	75	
0.425	70	
0.300	60	
0.212	46	
0.150	37	
0.063	27	

Fines By Dry Mass (%)	
<0.063mm	27

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		18
125		
90		
63		
50	100	
37.5	98	
28	97	
20	93	
14	90	
10	89	
6.3	87	
5	86	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

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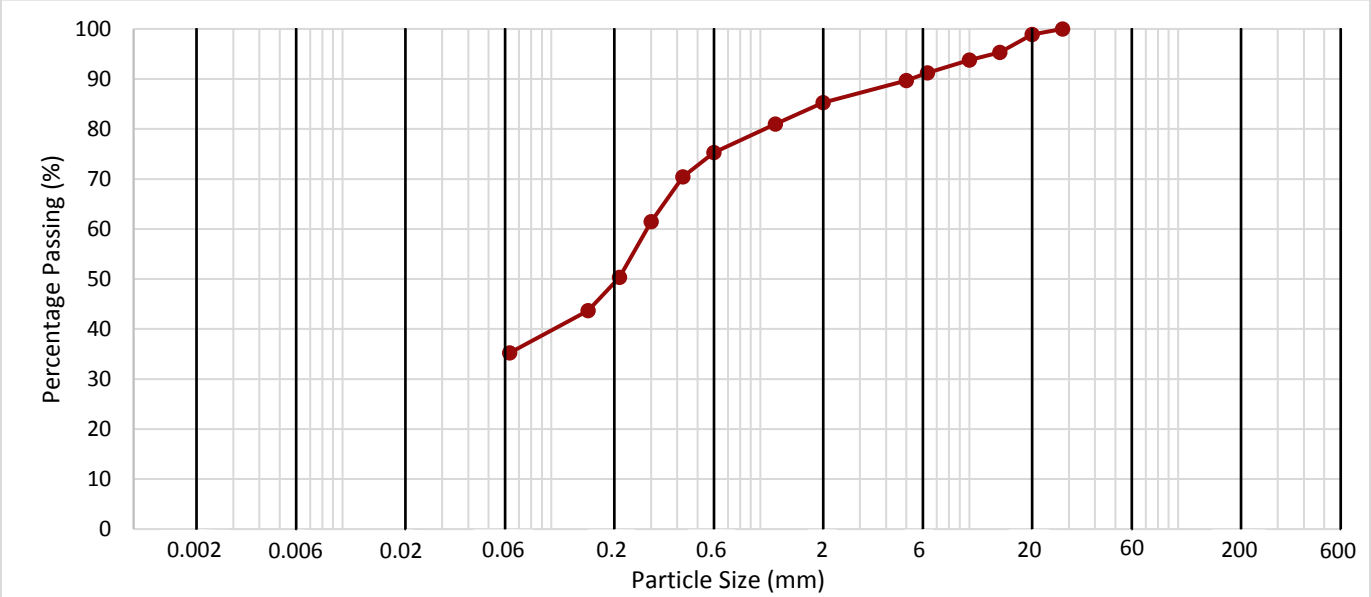
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP109	1.70 - 2.00	B	19	Dark greyish brown slightly gravelly sandy silty CLAY with occasional brick fragments. Gravel is brown and white angular flint and brown and white subangular quartzite	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	85	**50**
1.18	81	
0.600	75	
0.425	70	
0.300	61	
0.212	50	
0.150	44	
0.063	35	

Fines By Dry Mass (%)	
<0.063mm	**35**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**15**
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	95	
10	94	
6.3	91	
5	90	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/02/2018

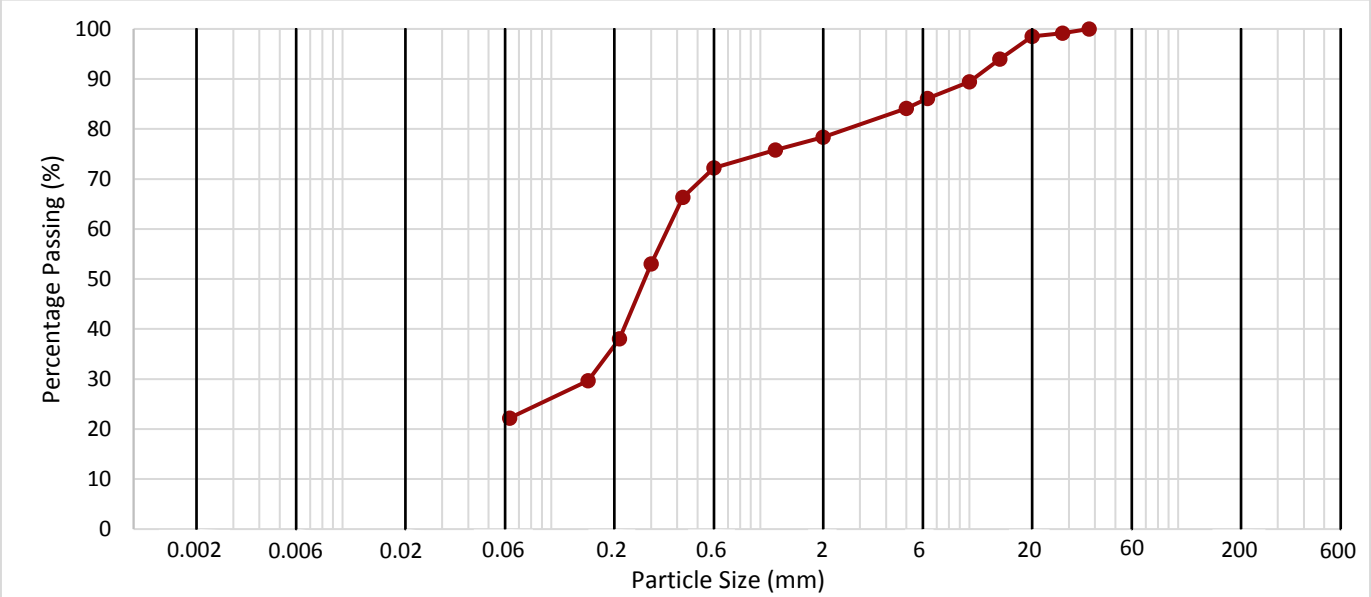
0998

Contract	**HCA Land at Pioneer Park**
Serial No.	**S32533**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP110	2.40 - 2.70	B	23	Reddish brown slightly clayey silty very gravelly SAND with occasional firm sandy silty clay lumps, asphalt fragments and rare brick and slag fragments. Gravel is reddish brown, black and white angular granite	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	78	56
1.18	76	
0.600	72	
0.425	66	
0.300	53	
0.212	38	
0.150	30	
0.063	22	

Fines By Dry Mass (%)	
<0.063mm	22

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		22
125		
90		
63		
50		
37.5	100	
28	99	
20	99	
14	94	
10	89	
6.3	86	
5	84	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/02/2018

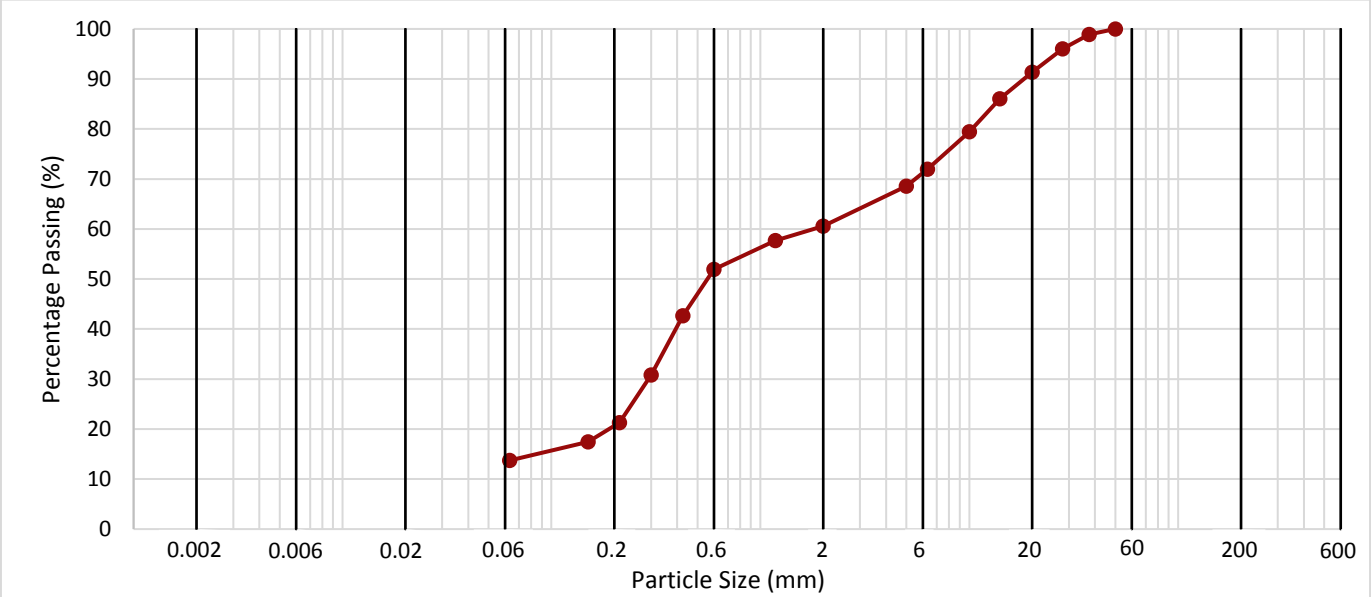
0998

Contract	**HCA Land at Pioneer Park**
Serial No.	**S32533**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP112	3.50 - 3.80	B	21	Brown clayey very gravelly SAND with occasional brick and rare granite, concrete and wood fragments. Gravel is brown, white and black angular flint and brown, white and black subangular and subrounded quartzite	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	61	47
1.18	58	
0.600	52	
0.425	43	
0.300	31	
0.212	21	
0.150	17	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		39
125		
90		
63		
50	100	
37.5	99	
28	96	
20	91	
14	86	
10	79	
6.3	72	
5	69	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

Laboratory Report

UKAS TESTING
2788

GSTL
GEO Site & Testing Services Ltd

Contract Number: 38122

Client Ref: **10016750**
Client PO:

Report Date: **17-02-2018**

Client **Arcadis**
Fortran Rd
St Mellons
Cardiff
CF3 0EY

Contract Title: **HCA Land at Pioneer Park**
For the attention of: **Jonathan Harris**

Date Received: **02-02-2018**
Date Commenced: **02-02-2018**
Date Completed: **17-02-2018**

Test Description	Qty
Moisture Content BS 1377 : Part 2 : 3.2 - * UKAS	9
1 Point Liquid & Plastic Limit 1377 : 1990 Part 2 : 4.4 & 5.3 - * UKAS	6
PSD Wet Sieve method 1377 : 1990 Part 2 : 9.2 - * UKAS	2
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) 1377 : 1990 Part 2 : 9.4 - * UKAS	2
Disposal of Samples on Project	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Quality Assistant)
Vaughan Edwards (Managing Director) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**38122**	
Site Name	**HCA Land at Pioneer Park**	

WS Window Sample	Sample Number	Sample Type	Depth (m)			Descriptions
WS101	1	D	1.60	-	1.70	Brown slightly fine to medium gravelly sandy CLAY
WS102	2	D	1.70	-	1.80	Brown slightly fine to medium gravelly sandy CLAY
WS103	3	D	2.30	-	2.40	Brown slightly fine to medium gravelly sandy CLAY
WS104	3	D	1.60	-	2.30	
WS104	5	D	2.10	-	2.30	Brown slightly fine to medium gravelly sandy CLAY
WS104	7	D	3.40	-	3.50	
WS105	4	D	2.20	-	2.30	Brown slightly fine to medium gravelly sandy CLAY
WS105	6	D	3.50	-	3.80	Brown slightly fine to medium gravelly sandy CLAY
WS105	7	D	3.80	-	4.00	Brown sandy GRAVEL
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		

Operators	Checked	16/02/2018	Richard John	
RO/MH	Approved	17/02/2018	Ben Sharp	

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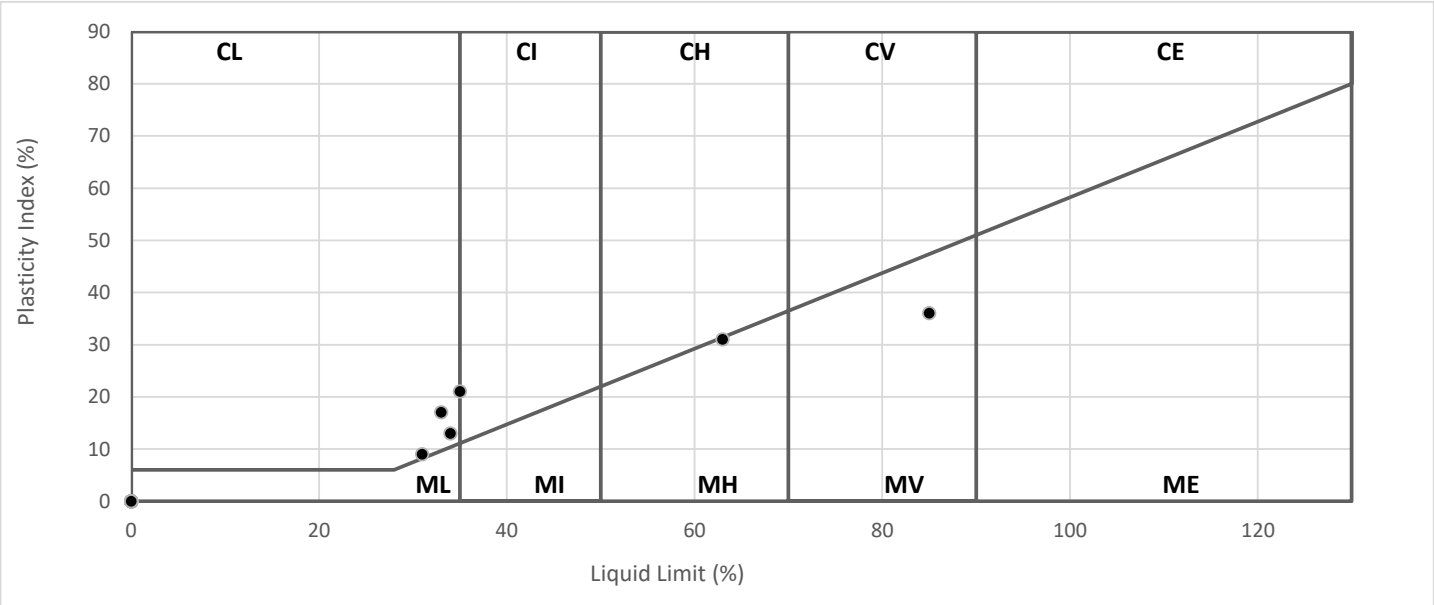
GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**38122**	
Site Name	**HCA Land at Pioneer Park**	

WS Window Sample	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
WS101	1	D	1.60	-	1.70	19	33	16	17	92	CL Low Plasticity
WS102	2	D	1.70	-	1.80	13	35	14	21	86	CL/I Low/Inter. Plasticity
WS103	3	D	2.30	-	2.40	20	34	21	13	91	CL Low Plasticity
WS104	3	D	1.60	-	2.30	57	63	32	31	82	MH High Plasticity
WS104	5	D	2.10	-	2.30	18	31	22	9	90	CL Low Plasticity
WS104	7	D	3.40	-	3.50	14					
WS105	4	D	2.20	-	2.30	78	85	49	36	82	MV Very High Plasticity
WS105	6	D	3.50	-	3.80	16					
WS105	7	D	3.80	-	4.00	8.7					
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	16/02/2018	Richard John	
DB	Approved	17/02/2018	Ben Sharp	

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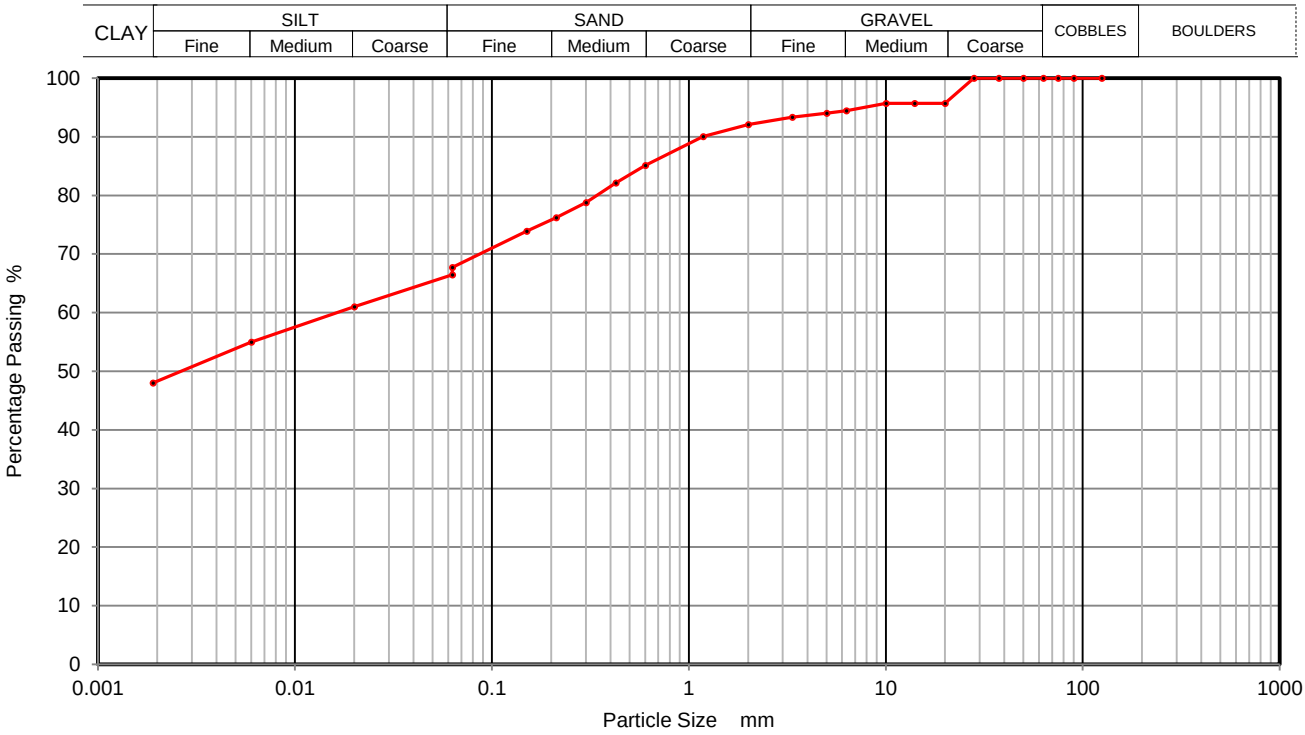
GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	38122
		Borehole/Pit No.	WS104
Site Name	HCA Land at Pioneer Park	Sample No.	3
Soil Description	Brown slightly fine to medium gravelly silty fine to coarse sandy CLAY	Depth Top	1.60
		Depth Base	1.80
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	61
90	100	0.0060	55
75	100	0.0019	48
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	96		
10	96		
6.3	94		
5	94		
3.35	93		
2	92		
1.18	90		
0.6	85		
0.425	82		
0.3	79		
0.212	76		
0.15	74		
0.063	68		

Sample Proportions	% dry mass
Cobbles	0
Gravel	8
Sand	24
Silt	20
Clay	48

Grading Analysis	
Uniformity Coefficient	

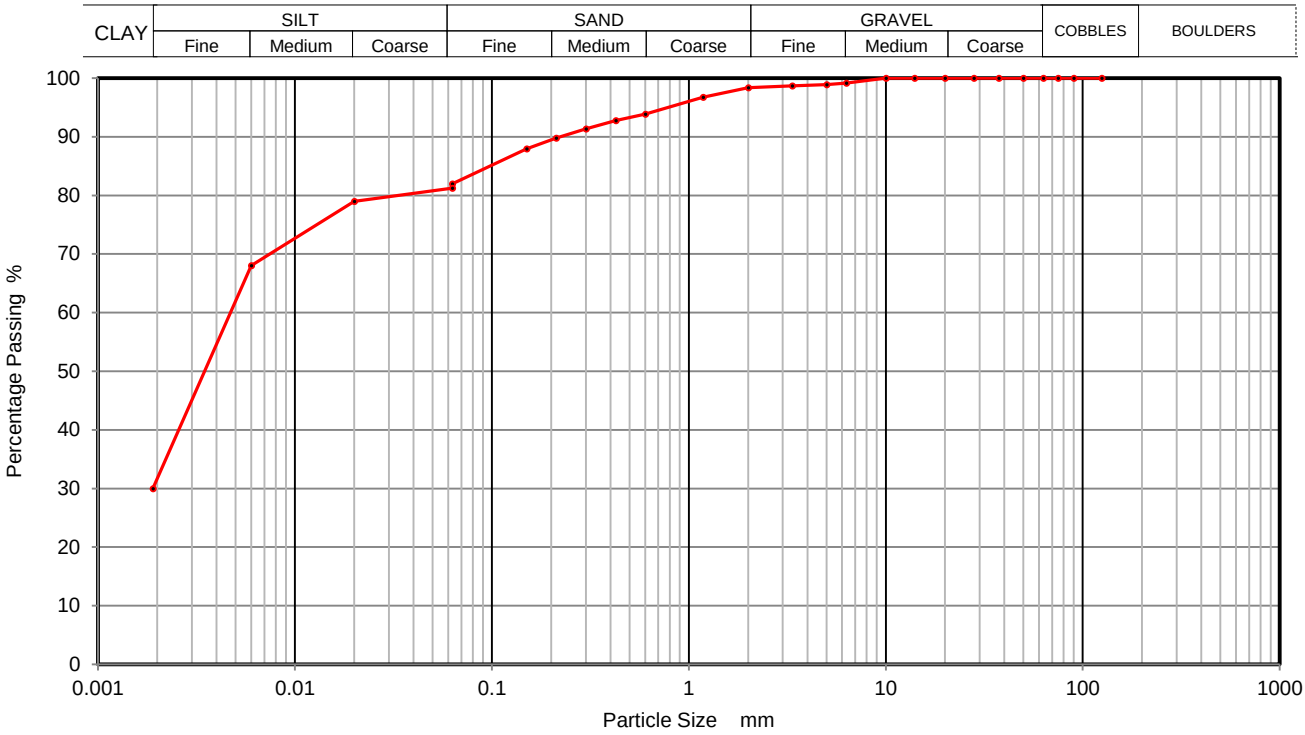
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/02/2018	Richard John	
RO/MH	Approved	17/02/2018	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	38122
		Borehole/Pit No.	WS105
Site Name	HCA Land at Pioneer Park	Sample No.	4
Soil Description	Brown fine to coarse sandy clayey SILT	Depth Top	2.20
		Depth Base	2.30
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	79
90	100	0.0060	68
75	100	0.0019	30
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	94		
0.425	93		
0.3	91		
0.212	90		
0.15	88		
0.063	82		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	16
Silt	52
Clay	30

Grading Analysis	
Uniformity Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/02/2018	Richard John	
RO/MH	Approved	17/02/2018	Ben Sharp	

UKAS TESTING 2788

APPENDIX I

Ground Gas Monitoring Results

Permanent Ground Gas Monitoring							
Borehole ID		WS101	WS102	WS103	WS104	WS105	WS106
Date		05.02.2018					
Weather		sunny but cold					
Atmospheric Pressure	(mb)	1029	1029	1029	1029	1029	1026
Gas Flow Rate	Peak (l/hr)	<0.1	<0.1	0.1	0.1	0.1	0.3
	Steady (l/hr)	<0.1	<0.1	<0.1	0.1	0.1	0.3
Methane (CH4)	Peak (% v/v)	<0.1	0.4	<0.1	0.2	0.1	<0.1
	Steady (% v/v)	<0.1	0.3	<0.1	0.2	0.1	<0.1
Carbon Dioxide (CO2)	Peak (% v/v)	2.8	2.0	7.7	8.1	2.4	0.5
	Steady (% v/v)	2.4	2.0	7.7	8.1	2.4	0.5
Oxygen	Minimum (% v/v)	16.9	16.6	10.9	8.9	16.7	18.9
	Steady (% v/v)	17.2	17.5	10.9	8.9	16.8	19.0
Hydrogen Sulphide	ppm	<1	<1	<1	<1	<1	<1
Carbon Monoxide	ppm	<1	<1	<1	6	20	<1
Q(hg) CH4	(l/hr)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Q(hg) CO2	(l/hr)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Depth to Product	m bgl	NA	NA	NA	NA	NA	NA
Depth to Water	m bgl	Dry	Dry	Dry	3.758	Dry	Dry
Depth to Base of well	m bgl	1.74	2.97	4.013	4.03	3.63	1.21
Well Screening	m bgl	0.8-1.8	1.5-2.1	2.0-4.0	1.5-4.0	1.0-3.5	0.6-1.6
Geology / Geological Unit		MG/natural	natural	natural	natural	MG/natural	MG

Notes:

-	Parameter not measured
mb	Millibar
%v/v	Percentage Volume by Volume
l/hr	Litres per hour
ppm	Parts Per Million
Q(hg)	Hazardous gas flow rate
m bgl	Metres below ground level
MG	Made ground

APPENDIX J

Derivation of Generic Assessment Criteria

SUMMARY

The purpose of this document is to describe the general principles adopted in the derivation of the Arcadis' Generic Assessment Criteria (GAC). The document and associated GAC underpins the generic quantitative risk assessments Arcadis undertakes for its clients and is not intended for any other use or use by others. Guidance has been provided by the EA to aid development of GAC which are appropriate for a typical England or Wales site, incorporating conservatism where warranted. Arcadis has used the EA guidance to develop in-house GAC to aid assessment of land contamination sites, and in particular to assess risks to human health receptors from chronic health effects and risks to water resource receptors. The GAC do not consider potential risks to ecological receptors, which may need to be assessed on specific sites. The following non-statutory technical guidance has been referred to in deriving the GAC.

- EA Science Reports SC050021/SR2, SC050021/SR3 and SC050021/SR7.
- Related Toxicity and Soil Guideline Value reports
- EA Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination
- EA. Groundwater Protection and Water Quality, March 2017 (accessible online https://www.gov.uk/government/collections/groundwater-protection)
- SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination

The GAC used within this report have been derived for "commercial end use". Commercial end use assumes a pre-1970s commercial property is present at the site with some open areas uncovered by hardstanding. A neighbouring resident is assumed present, comprising a small terraced house without basement.

Arcadis has undertaken environmental works on hundreds of potentially contaminated sites across the UK. The typical shallow geology encountered comprises granular soils or made ground, with a low organic matter content. As such, Arcadis has taken the decision to derive in-house GAC for a *sand* rather than sandy loam soil-type used by the EA to derive Soil Guideline Values, with an organic matter content of 0.34% (fraction of organic carbon content 0.002, typical of many sites).

To derive Human Health GAC (HH-GAC), the following exposure pathways are considered active for potential soil or groundwater exposures:

Site End-Use	On-Site Pathways
Commercial/ Industrial	• Incidental ingestion of soil or dust • Incidental dermal contact with soil or dust • Inhalation of dusts inside or outside • Inhalation of vapours outside from a soil or groundwater source • Inhalation of vapours inside from a soil or groundwater source
Neighbouring resident	Migration of impacted groundwater beneath neighbouring property, and subsequently: • Inhalation of indoor air in an off-site property (originating from an on-site soil or groundwater source) • Inhalation of outdoor air in an off-site garden (originating from an on-site soil or groundwater source)

Two levels of water quality standard have been considered to enable Water Resource GAC (WR-GAC) to be developed depending on the environmental setting of a site. The WR-GAC have been derived based on adopted Environmental Quality Standards and Drinking Water Standards. No attenuation with transport off-site is assumed.

The following modelling tools have been utilised in the derivation of the GAC:

HH-GAC (on-site): CLEA 1.07 and RBCA Toolkit v2.6
HH-GAC (off-site): RBCA Toolkit v2.6 and Remedial Targets Worksheet v3.2
WR-GAC: Remedial Targets Worksheet v3.2

Example model inputs are presented in the following tables, alongside the CLEA modelling outputs.

	Air-water partition co-efficient		Diffusion co-efficient in air		Diffusion co-efficient in water		Relative molecular mass		Vapour pressure		Water solubility		Koc	
	cm3 cm3	Notes	m2 s-1	Notes	m2 s-1	Notes	g mol-1	Notes	Pa	Notes	mg L-1	Notes	Log (dimensior	Notes
Benzene	1.16E-01	Science Report – SC050021/SR7	8.77E-06	Science Report – SC050021/SR7	6.64E-10	Science Report – SC050021/SR7	78.11	Science Report – SC050021/SR7	6.24E+03	Science Report – SC050021/SR7	1.78E+03	Science Report – SC050021/SR7	1.83E+00	Science Report – SC050021/SR7
Toluene	1.15E-01	Science Report – SC050021/SR7	7.78E-06	Science Report – SC050021/SR7	5.88E-10	Science Report – SC050021/SR7	92.14	Science Report – SC050021/SR7	1.73E+03	Science Report – SC050021/SR7	5.90E+02	Science Report – SC050021/SR7	2.31E+00	Science Report – SC050021/SR7
Ethylbenzene	1.39E-01	Science Report – SC050021/SR7	7.04E-06	Science Report – SC050021/SR7	5.31E-10	Science Report – SC050021/SR7	106.17	Science Report – SC050021/SR7	5.53E+02	Science Report – SC050021/SR7	1.80E+02	Science Report – SC050021/SR7	2.65E+00	Science Report – SC050021/SR7
Sum xylenes	1.04E-01	Average for three xylenes	7.03E-06	Average for three xylenes	5.3E-10	Average for three xylenes	106.17	Average for three xylenes	4.52E+02	Average for three xylenes	1.91E+02	Average for three xylenes	2.66E+00	Average for three xylenes
MTBE	2.04E-02	Literature review	7.10E-06	Literature review	9.00E-10	Literature review	88.17	Literature review	3.45E+04	Literature review	4.80E+04	Literature review	1.08E+00	Literature review
Aliphatic >C5-6	3.40E+01	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	81	Literature review	3.60E+04	Literature review	3.60E+01	Literature review	2.90E+00	Literature review
Aliphatic>C6-8	5.10E+01	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	100	Literature review	6.40E+03	Literature review	5.40E+00	Literature review	3.60E+00	Literature review
Aliphatic>C8-10	8.20E+01	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	130	Literature review	6.40E+02	Literature review	4.30E-01	Literature review	4.51E+00	Literature review
Aliphatic>C10-12	1.30E+02	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	160	Literature review	6.50E+01	Literature review	3.40E-02	Literature review	5.40E+00	Literature review
Aliphatic>C12-16	5.40E+02	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	200	Literature review	4.80E+00	Literature review	7.60E-04	Literature review	6.70E+00	Literature review
Aliphatic>C16-35	6.40E+03	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	270	Literature review	7.70E-01	Literature review	1.30E-06	Literature review	9.00E+00	Literature review
Aromatic >C8-10	4.90E-01	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	120	Literature review	6.40E+02	Literature review	6.50E+01	Literature review	3.20E+00	Literature review
Aromatic >C10-12	1.40E-01	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	130	Literature review	6.40E+01	Literature review	2.50E+01	Literature review	3.40E+00	Literature review
Aromatic >C12-16	5.40E-02	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	150	Literature review	4.80E+00	Literature review	5.80E+00	Literature review	3.70E+00	Literature review
Aromatic >C16-21	1.30E-02	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	190	Literature review	7.70E-01	Literature review	5.10E-01	Literature review	4.20E+00	Literature review
Aromatic >C21-35	6.80E-04	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	240	Literature review	4.40E-04	Literature review	6.60E-03	Literature review	5.11E+00	Literature review

Chemical Name	Chemical Type	Oral HCV						Inhalation HCV						Combine oral and inhalation AC	Oral MDI for adults		Inhalation MDI for adults	
		Type	µg kg-1 BW day-1	Notes	Oral exposure	Dermal exposure	Inhalation exposure	Type	µg kg-1 BW day-1	Notes	Oral exposure	Dermal exposure	Inhalation exposure		µg kg-1 BW day-1	Notes	µg kg-1 BW day-1	Notes
Benzene	organic	ID	2.90E-01	UK TOX (March 2009)	Yes	Yes	No	ID	1.40E+00	UK TOX (March 2009)	No	No	Yes	Yes	NR	NA	NR	NA
Toluene	organic	TDI	2.23E+02	UK TOX (March 2009)	Yes	Yes	No	TDI	1.40E+03	UK TOX (March 2009)	No	No	Yes	Yes	1.00E+01	UK TOX (March 2009)	5.20E+02	UK TOX (March 2009)
Ethylbenzene	organic	TDI	1.00E+02	UK TOX (March 2009)	Yes	Yes	No	TDI	7.43E+01	Literature review	No	No	Yes	Yes	5.00E+00	UK TOX (March 2009)	1.30E+02	UK TOX (March 2009)
Sum xylenes	organic	TDI	1.80E+02	UK TOX (March 2009)	Yes	Yes	No	TDI	6.00E+01	UK TOX (March 2009)	No	No	Yes	Yes	1.10E+01	UK TOX (March 2009)	1.40E+02	UK TOX (March 2009)
MTBE	organic	TDI	8.60E+02	Literature review	Yes	Yes	No	TDI	8.60E+02	Literature review	No	No	Yes	Yes	3.00E+01	EU Risk Assessment Report	1.89E+02	EU Risk Assessment Report
Aliphatic >C5-6	organic	TDI	5.00E+03	TPHCWG	Yes	Yes	No	TDI	5.26E+03	TPHCWG	No	No	Yes	Yes	3.50E+05	TDI x 70kg (MDI unknown)	3.68E+05	TDI x 70kg (MDI unknown)
Aliphatic>C6-8	organic	TDI	5.00E+03	TPHCWG	Yes	Yes	No	TDI	5.26E+03	TPHCWG	No	No	Yes	Yes	3.50E+05	TDI x 70kg (MDI unknown)	3.68E+05	TDI x 70kg (MDI unknown)
Aliphatic>C8-10	organic	TDI	1.00E+02	TPHCWG	Yes	Yes	No	TDI	2.70E+02	TPHCWG	No	No	Yes	Yes	7.00E+03	TDI x 70kg (MDI unknown)	1.89E+04	TDI x 70kg (MDI unknown)
Aliphatic>C10-12	organic	TDI	1.00E+02	TPHCWG	Yes	Yes	No	TDI	2.70E+02	TPHCWG	No	No	Yes	Yes	7.00E+03	TDI x 70kg (MDI unknown)	1.89E+04	TDI x 70kg (MDI unknown)
Aliphatic>C12-16	organic	TDI	1.00E+02	TPHCWG	Yes	Yes	No	TDI	2.70E+02	TPHCWG	No	No	Yes	Yes	7.00E+03	TDI x 70kg (MDI unknown)	1.89E+04	TDI x 70kg (MDI unknown)
Aliphatic>C16-35	organic	TDI	2.00E+03	TPHCWG	Yes	Yes	No	NR			NR	NR	NR	NR	1.40E+05	TDI x 70kg (MDI unknown)		
Aromatic >C8-10	organic	TDI	4.00E+01	TPHCWG	Yes	Yes	No	TDI	5.50E+01	TPHCWG	No	No	Yes	Yes	2.80E+03	TDI x 70kg (MDI unknown)	3.85E+03	TDI x 70kg (MDI unknown)
Aromatic >C10-12	organic	TDI	4.00E+01	TPHCWG	Yes	Yes	No	TDI	5.50E+01	TPHCWG	No	No	Yes	Yes	2.80E+03	TDI x 70kg (MDI unknown)	3.85E+03	TDI x 70kg (MDI unknown)
Aromatic >C12-16	organic	TDI	4.00E+01	TPHCWG	Yes	Yes	No	TDI	5.50E+01	TPHCWG	No	No	Yes	Yes	2.80E+03	TDI x 70kg (MDI unknown)	3.85E+03	TDI x 70kg (MDI unknown)
Aromatic >C16-21	organic	TDI	3.00E+01	TPHCWG	Yes	Yes	No	NR			NR	NR	NR	NR	2.10E+03	TDI x 70kg (MDI unknown)		
Aromatic >C21-35	organic	TDI	3.00E+01	TPHCWG	Yes	Yes	No	NR			NR	NR	NR	NR	2.10E+03	TDI x 70kg (MDI unknown)		

PHYSICAL PROPERTIES

		Commercial Land Use	Source
Soil type	na	Sand	Professional experience
Porosity (total)	cm3 cm-3	0.54	SC050021/SR3
Porosity (air-filled)*	cm3 cm-3	0.30	SC050021/SR3
Porosity (water-filled)*	cm3 cm-3	0.24	SC050021/SR3
Capillary fringe porosity (air-filled)	cm3 cm-3	0.01	Literature value
Capillary fringe porosity (water-filled)	cm3 cm-3	0.53	Literature value
Thickness of capillary fringe	m	0.1	Literature value
Residual soil water content	cm3 cm-3	0.07	SC050021/SR3
Saturated hydraulic conductivity	cm s-1	7.36E-03	SC050021/SR3
van Genuchten shape parameter	dimensionless	3.51E-01	SC050021/SR3
Bulk density	g cm-3	1.18	SC050021/SR3
Soil organic matter content	%	0.34	Professional experience
Threshold value of wind speed at 10m	m s-1	7.20	SC050021/SR3
Empirical function for dust model	dimensionless	1.22	SC050021/SR3
Ambient soil temperature	K	283	SC050021/SR3
Mean annual windspeed (10m)	m s-1	5.00	SC050021/SR3
Air dispersion factor at 0.8m	g m-2 s-1 per kg m-3	68.0	SC050021/SR3
Air dispersion factor at 1.6m	g m-2 s-1 per kg m-3	120.0	SC050021/SR3
Fraction of site with hard or vegetative cover	m2 m-2	0.80	SC050021/SR3
Depth to groundwater (RBCA)	m	1	Assumption
Infiltration rate in vadose zone	m day-1	6.80E-04	Likely worst-case

Aquifer type**	na	Sand	Assumption
Source width	m	40	Likely worst-case
Source length	m	40	Likely worst-case
Saturated aquifer thickness	m	10	Assumption
Mixing zone depth	m	5.5	Calculated in RTW
Hydraulic conductivity	m day-1	20	Literature value
Hydraulic gradient	m m-1	0.001	Typical value for sand
Aquifer soil organic matter content	%	0.34	Professional experience
Effective Porosity (total)**	cm3 cm-3	0.3	Literature value
Aquifer bulk density**	g cm-3	1.18	SC050021/SR3
Distance to neighbouring resident**	m	5	Likely worst-case

Notes:

* Assumed to be present in foundation cracks when modelling in RBCA Toolkit

** Only used to generate GAC for neighbouring residents through off-site migration of impact in groundwater

BUILDING PROPERTIES				
		Residential (neighbouring resident)	Commercial (on-site)	Source
Building footprint	m2	2.80E+01	4.24E+02	SC050021/SR3
Living space air exchange rate	hr-1	0.50	1.00	SC050021/SR3
Living space height (above ground)	m	4.8	9.6	SC050021/SR3
Living space height (below ground)	m	0.0	0.0	SC050021/SR3
Pressure difference	Pa	3.1	4.4	SC050021/SR3
Foundation thickness	m	1.50E-01	1.50E-01	SC050021/SR3
Floor crack area	cm2	4.23E+02	1.65E+03	SC050021/SR3
Dust loading factor	µg m-3	5.00E+01	1.00E+02	SC050021/SR3

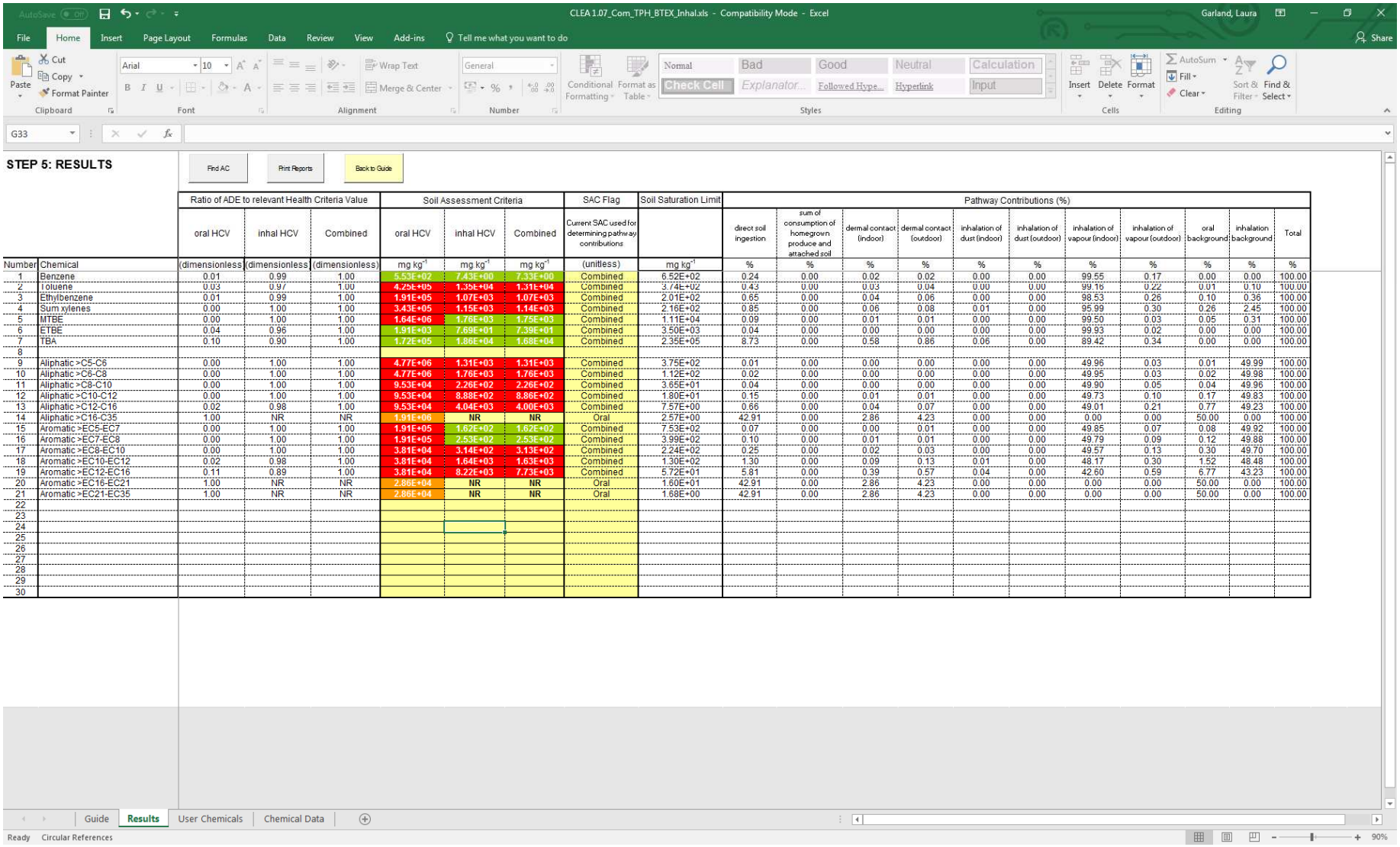
CLEA 1.07 EXPOSURE DATA		Age Class						
		Residents						Commercial Worker
Age class	-	1	2	3	4	5	6	17
Frequency of inhalation (dust and vapour indoors)	days yr-1	365	365	365	365	365	365	230
Frequency of inhalation (dust and vapour outdoors)	days yr-1	365	365	365	365	365	365	170
Occupancy period (indoors)	hr day-1	23	23	23	23	19	19	8.3
Occupancy period (outdoors)	hr day-1	1	1	1	1	1	1	0.7
Body weight	kg	5.6	9.8	12.7	15.1	16.9	19.7	70
Body height	m	0.7	0.8	0.9	0.9	1	1.1	1.6
Inhalation rate*	m3 day-1	5.4	8	8.9	10.1	10.1	10.1	15.7

* Inhalation rate adopted from Category 4 Screening Levels

RBCA Toolkit EXPOSURE DATA		Age Class	
		0-6	17
Averaging time	yrs	6	49
Body weight	kg	13.3	70
Exposure duration	yrs	6	49
Averaging time (vapour flux)	yrs	6	49
Exposure frequency (indoors)*	days yr-1	365	29.9
Exposure frequency (outdoors)*	days yr-1	16.8	1.87

Notes:
Time-weighted average used for 0-6 year old female child

* RBCA Toolkit compares an acceptable air concentration to a predicted air concentration. Only the exposure frequency can be modified (i.e. inhalation rate, time exposed cannot). As such, the TDSI (or ID) was converted to an acceptable indoor air concentration using the time-weighted properties for a 0-6 year old female child as defined within the Category 4 Screening Levels. The exposure frequency for other scenarios was modified to account for the differing exposure scenarios for the remaining pathways, to be equivalent to modifying the inhalation rate and time exposed.



		Ratio of ADE to relevant Health Criteria Value			Soil Assessment Criteria			SAC Flag	Soil Saturation Limit	Pathway Contributions (%)										
		oral HCV	inhal HCV	Combined	oral HCV	inhal HCV	Combined	Current SAC used for determining pathway contributions		direct soil ingestion	sum of consumption of homegrown produce and attached soil	dermal contact (indoor)	dermal contact (outdoor)	inhalation of dust (indoor)	inhalation of dust (outdoor)	inhalation of vapour (indoor)	inhalation of vapour (outdoor)	oral background	inhalation background	Total
Number	Chemical	(dimensionless)	(dimensionless)	(dimensionless)	mg kg^{-1}	mg kg^{-1}	mg kg^{-1}	(unitless)	mg kg^{-1}	%	%	%	%	%	%	%	%	%	%	%
1	Benzene	0.01	0.99	1.00	5.53E+02	7.43E+00	7.33E+00	Combined	6.52E+02	0.24	0.00	0.02	0.02	0.00	0.00	99.55	0.17	0.00	0.00	100.00
2	Toluene	0.03	0.97	1.00	4.25E+05	1.35E+04	1.31E+04	Combined	3.74E+02	0.43	0.00	0.03	0.04	0.00	0.00	99.16	0.22	0.01	0.10	100.00
3	Ethylbenzene	0.01	0.99	1.00	1.91E+05	1.07E+03	1.07E+03	Combined	2.01E+02	0.65	0.00	0.04	0.06	0.00	0.00	98.53	0.26	0.10	0.36	100.00
4	Sum xylenes	0.00	1.00	1.00	3.43E+05	1.15E+03	1.14E+03	Combined	2.16E+02	0.85	0.00	0.06	0.08	0.01	0.00	95.99	0.30	0.26	2.45	100.00
5	MTBE	0.00	1.00	1.00	1.64E+06	1.76E+03	1.75E+03	Combined	1.11E+04	0.09	0.00	0.01	0.01	0.00	0.00	99.50	0.03	0.05	0.31	100.00
6	ETBE	0.04	0.96	1.00	1.91E+03	7.69E+01	7.39E+01	Combined	3.50E+03	0.04	0.00	0.00	0.00	0.00	0.00	99.93	0.02	0.00	0.00	100.00
7	TBA	0.10	0.90	1.00	1.72E+05	1.86E+04	1.68E+04	Combined	2.35E+05	8.73	0.00	0.58	0.86	0.06	0.00	89.42	0.34	0.00	0.00	100.00
8																				
9	Aliphatic >C5-C6	0.00	1.00	1.00	4.77E+06	1.31E+03	1.31E+03	Combined	3.75E+02	0.01	0.00	0.00	0.00	0.00	0.00	49.96	0.03	0.01	49.99	100.00
10	Aliphatic >C6-C8	0.00	1.00	1.00	4.77E+06	1.76E+03	1.76E+03	Combined	1.12E+02	0.02	0.00	0.00	0.00	0.00	0.00	49.95	0.03	0.02	49.98	100.00
11	Aliphatic >C8-C10	0.00	1.00	1.00	9.53E+04	2.26E+02	2.26E+02	Combined	3.65E+01	0.04	0.00	0.00	0.00	0.00	0.00	49.90	0.05	0.04	49.96	100.00
12	Aliphatic >C10-C12	0.00	1.00	1.00	9.53E+04	8.88E+02	8.86E+02	Combined	1.80E+01	0.15	0.00	0.01	0.01	0.00	0.00	49.73	0.10	0.17	49.83	100.00
13	Aliphatic >C12-C16	0.02	0.98	1.00	9.53E+04	4.04E+03	4.00E+03	Combined	7.57E+00	0.66	0.00	0.04	0.07	0.00	0.00	49.01	0.21	0.77	49.23	100.00
14	Aliphatic >C16-C35	1.00	NR	NR	1.91E+06	NR	NR	Oral	2.57E+00	42.91	0.00	2.86	4.23	0.00	0.00	0.00	0.00	50.00	0.00	100.00
15	Aromatic >EC5-EC7	0.00	1.00	1.00	1.91E+05	1.62E+02	1.62E+02	Combined	7.53E+02	0.07	0.00	0.00	0.01	0.00	0.00	49.85	0.07	0.08	49.92	100.00
16	Aromatic >EC7-EC8	0.00	1.00	1.00	1.91E+05	2.53E+02	2.53E+02	Combined	3.99E+02	0.10	0.00	0.01	0.01	0.00	0.00	49.79	0.09	0.12	49.88	100.00
17	Aromatic >EC8-EC10	0.00	1.00	1.00	3.81E+04	3.14E+02	3.13E+02	Combined	2.24E+02	0.25	0.00	0.02	0.03	0.00	0.00	49.57	0.13	0.30	49.70	100.00
18	Aromatic >EC10-EC12	0.02	0.98	1.00	3.81E+04	1.64E+03	1.63E+03	Combined	1.30E+02	1.30	0.00	0.09	0.13	0.01	0.00	48.17	0.30	1.52	48.48	100.00
19	Aromatic >EC12-EC16	0.11	0.89	1.00	3.81E+04	8.22E+03	7.73E+03	Combined	5.72E+01	5.81	0.00	0.39	0.57	0.04	0.00	42.60	0.59	6.77	43.23	100.00
20	Aromatic >EC16-EC21	1.00	NR	NR	2.86E+04	NR	NR	Oral	1.60E+01	42.91	0.00	2.86	4.23	0.00	0.00	0.00	0.00	50.00	0.00	100.00
21	Aromatic >EC21-EC35	1.00	NR	NR	2.86E+04	NR	NR	Oral	1.68E+00	42.91	0.00	2.86	4.23	0.00	0.00	0.00	0.00	50.00	0.00	100.00
22																				
23																				
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APPENDIX K

Generic Assessment Criteria

ARCADIS GENERIC ASSESSMENT CRITERIA FOR SOILS

- COMMERCIAL END USE -

Compound	Theoretical Soil Saturation Limit	Human Health - Commercial				Water Resources	
		Commercial Worker - Oral	Commercial Worker - Inhalation	Commercial Worker - Combined	Neighbouring Resident	Surface Waters	Aquifers
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	652	553	7.43	7.33	1.84	0.019	0.0019
Toluene	374	*4.25E+05*	*1.35E+04*	*1.31E+04*	ND	0.24	2.3
Ethylbenzene	201	*1.91E+05*	*1070*	*1070*	ND	0.11	1.7
Xylenes	216	*3.43E+05*	*1150*	*1140*	ND	0.17	2.9
MTBE	1.11E+04	*1.64E+06*	1760	1750	467	0.018	0.018
ETBE	3500	1910	76.9	73.9	55.9	0.07	0.07
TBA	2.35E+05	1.72E+05	1.86E+04	1.68E+04	2260	0.014	0.014
Aliphatic >C5-6	375	*4.77E+06*	*1310*	*1310*	ND	#	#
Aliphatic>C6-8	112	*4.77E+06*	*1760*	*1760*	ND	#	#
Aliphatic>C8-10	36.5	*9.53E+04*	*226*	*226*	ND	#	#
Aliphatic>C10-12	18	*9.53E+04*	*888*	*886*	ND	#	#
Aliphatic>C12-16	7.57	*9.53E+04*	*4040*	*4000*	ND	#	#
Aliphatic>C16-35	2.57	*1.91E+06*	NR	*1.91E+06*	NR	#	#
Aromatic >C5-C7 (as benzene)	652	553	7.43	7.33	1.84	0.019	0.0019
Aromatic >C7-C8 (as toluene)	374	*4.25E+05*	*1.35E+04*	*1.31E+04*	ND	0.24	2.3
Aromatic >C8-10	224	*3.81E+04*	*314*	*313*	ND	#	#
Aromatic >C10-12	130	*3.81E+04*	*1640*	*1630*	ND	#	#
Aromatic >C12-16	57.2	*3.81E+04*	*8220*	*7730*	ND	#	#
Aromatic >C16-21	16	*2.86E+04*	NR	*2.86E+04*	NR	#	#
Aromatic >C21-35	1.68	*2.86E+04*	NR	*2.86E+04*	NR	#	#
TPH	na	na	na	na	na	na	na
Naphthalene	28.1	*3.64E+04*	*334*	*331*	ND	0.015	0.015
Acenaphthylene	72.7	*1.10E+05*	*1.57E+05*	*6.46E+04*	ND	-	-
Acenaphthene	15.6	*1.10E+05*	*9.87E+04*	*5.19E+04*	ND	-	-
Fluorene	12	*7.31E+04*	*1.90E+05*	*5.28E+04*	ND	-	-
Phenanthrene	4.83	*2.28E+04*	*2.79E+04*	*1.25E+04*	ND	-	-
Anthracene	0.706	*5.49E+05*	*5.84E+06*	*5.02E+05*	ND	-	-
Fluoranthene	6.46	*2.29E+04*	*8.99E+05*	*2.23E+04*	ND	-	-
Pyrene	0.75	*5.49E+04*	*2.12E+06*	*5.35E+04*	ND	-	-
Benzo(a)anthracene	0.582	*284*	*325*	*151*	ND	-	-
Chrysene	0.15	*567*	*845*	*339*	ND	-	-
Benzo(b)fluoranthene	0.413	*71.3*	*115*	*44*	ND	-	0.026
Benzo(k)fluoranthene	0.234	*1880*	*3070*	*1170*	ND	-	0.037
Benzo(a)pyrene (C4SL)	5.46		*76*		ND	0.0002	0.013
Indeno(123cd)pyrene	0.0209	*810*	*1280*	*497*	ND	-	0.022
Dibenzo(ah)anthracene	0.00134	*5.67*	*9.08*	*3.49*	ND	-	-
Benzo(ghi)perylene	0.00634	*6290*	*1.04E+04*	*3920*	ND	-	0.105
Dichloroethane (1,1)	1580	*1.52E+05*	44.2	44.1	50.6	0.0042	0.0042
Dichloroethane (1,2)	2160	229	0.212	0.212	0.0861	0.013	0.0038
Trichloroethane (111)	721	*1.14E+06*	160	160	ND	0.28	5.64
Dichloroethene (1,1)	1310	*9.52E+04*	6.39	6.39	37.7	0.37	0.019
Dichloroethene (cis 1,2)	1120	*1.13E+04*	3.34	3.33	3.62	0.041	0.041
Dichloroethene (trans 1,2)	2040	*3.23E+04*	49.4	49.3	11.9	0.041	0.041
Trichloroethene	724	*953*	0.28	0.28	0.73	0.027	0.027
Tetrachloroethene	183	*1.12E+04*	3.78	3.78	11.7	0.041	0.041
Chloroform (Trichloromethane)	2880	*2.34E+04*	27.4	27.4	25	0.0041	0.49
Vinyl Chloride (chloroethene)	1180	26.7	0.027	0.027	0.227	0.0011	0.0011
Chlorobenzene	279	*1.48E+05*	11	11	10.1	0.37	0.37
Phenol (SGV)	2.02E+04		3200		2570	0.014	0.014
Arsenic (C4SL)	NVP		640		NVP		
Barium	NVP	2.22E+04	4.69E+04	1.90E+04	NVP		
Boron	NVP	2.38E+05	2.82E+07	2.36E+05	NVP		
Cadmium (C4SL)	NVP		410		NVP		
Chromium (as VI) (C4SL)	NVP		49		NVP		
Chromium (as III)	NVP	3.31E+05	8570	8570	NVP		
Copper	NVP	1.89E+05	8.96E+04	6.83E+04	NVP		
Lead (C4SL)	NVP		2330		NVP		
Mercury (inorganic - SGV)	NVP		3600		NVP		
Mercury (elemental)	1.47	*NR*	*2.68*	*2.68*	1.43		
Mercury (methylated)	36	*357*	*852*	*252*	34.7		
Molybdenum	NVP	5550	1.12E+06	5540	NVP		
Nickel	NVP	3080	983	983	NVP		
Selenium (SGV)	NVP		1.30E+04		NVP		
Zinc	NVP	7.35E+05	1.97E+08	7.33E+05	NVP		

Notes:

Where combined GAC is greater than the theoretical maximum concentration in soil (1kg per kg), 1.0E+06 mg/kg presented as GAC

Italics	Target exceeds theoretical soil saturation limit. Concentrations above the soil saturation limit may indicate the presence of separate phase in soil, but does not necessarily present a significant risk
NR	No appropriate reference dose identified during review of toxicological data
#	No GAC for individual TPH fractions given that the compliance criteria is for sum TPH
na	Comprises multiple contaminants - no GAC derived
-	No water quality standard identified as suitable for deriving generic assessment criteria
C4SL	Category Four Screening Level, adopted from The Companion Document to SP1010, DEFRA 2014
NVP	Contaminant has only a low vapour pressure in soil
Metals/inorganics	Inhalation exposure via dust inhalation only
ND	Results of modelling indicates pathway not considered to present a significant risk
	No GAC as potential for leaching commonly linked to the soil pH/cannot be readily modelled

ARCADIS GENERIC ASSESSMENT CRITERIA FOR GROUNDWATER

- COMMERCIAL END USE -

Compound	Human Health - Commercial		Water Resources	
	Commercial	Neighbouring Resident	Surface Waters	Aquifers
	µg/l	µg/l	µg/l	µg/l
Benzene	5.70E+04	1010	10	1
Toluene	>SOL	>SOL	74	700
Ethylbenzene	>SOL	5.87E+04	20	300
Xylenes	>SOL	6.76E+04	30	500
MTBE	2.40E+07	6.76E+04	15	15
ETBE	2.00E+06	3.80E+04	47	47
TBA	1.00E+08	1.96E+06	12	12
Aliphatic >C5-6	>SOL	>SOL	#	#
Aliphatic>C6-8	>SOL	>SOL	#	#
Aliphatic>C8-10	>SOL	>SOL	#	#
Aliphatic>C10-12	>SOL	>SOL	#	#
Aliphatic>C12-16	>SOL	>SOL	#	#
Aliphatic>C16-35	NR	NR	#	#
Aromatic >C5-C7 (as benzene)	5.70E+04	1010	10	1
Aromatic >C7-C8 (as toluene)	>SOL	>SOL	74	700
Aromatic >C8-10	>SOL	1.15E+04	#	#
Aromatic >C10-12	>SOL	9490	#	#
Aromatic >C12-16	>SOL	>SOL	#	#
Aromatic >C16-21	NR	NR	#	#
Aromatic >C21-35	NR	NR	#	#
TPH	na	na	10	10
Naphthalene	>SOL	4110	2	2
Acenaphthylene	>SOL	>SOL	-	-
Acenaphthene	>SOL	>SOL	-	-
Fluorene	>SOL	>SOL	-	-
Phenanthrene	>SOL	>SOL	-	-
Anthracene	>SOL	>SOL	-	-
Fluoranthene	>SOL	>SOL	-	-
Pyrene	>SOL	>SOL	-	-
Benzo(a)anthracene	>SOL	>SOL	-	-
Chrysene	>SOL	>SOL	-	-
Benzo(b)fluoranthene	>SOL	>SOL	-	0.025
Benzo(k)fluoranthene	>SOL	>SOL	-	0.025
Benzo(a)pyrene	>SOL	>SOL	0.00017	0.01
Indeno(123cd)pyrene	>SOL	>SOL	-	0.025
Dibenzo(ah)anthracene	>SOL	>SOL	-	-
Benzo(ghi)perylene	>SOL	>SOL	-	0.025
Dichloroethane (1,1)	1.60E+06	3.33E+04	2.7	2.7
Dichloroethane (1,2)	3600	69.8	10	3
Trichloroethane (111)	>SOL	2.97E+05	100	2000
Dichloroethene (1,1)	7.40E+05	1.42E+04	140	7
Dichloroethene (cis 1,2)	1.20E+05	2240	25	25
Dichloroethene (trans 1,2)	4.30E+05	7220	25	25
Trichloroethene	1.30E+04	274	10	10
Tetrachloroethene	1.40E+05	2840	10	10
Chloroform (Trichloromethane)	8.20E+05	1.54E+04	2.5	300
Vinyl Chloride (chloroethene)	5000	108	0.5	0.5
Chlorobenzene	1.30E+05	2850	100	100
Phenol	>SOL	1.42E+06	7.7	7.7
Arsenic (inorganic)	NVP	NVP	50	10
Barium	NVP	NVP	700	700
Boron	NVP	NVP	2000	1000
Cadmium	NVP	NVP	0.08 - 0.25	5
Chromium (as VI)	NVP	NVP	3.4	50
Chromium (as III)	NVP	NVP	4.7	
Copper	NVP	NVP	1	2000
Lead	NVP	NVP	1.2	10
Mercury (inorganic)	NVP	NVP		
Mercury (elemental)	>SOL	9.7	0.05	1
Mercury (methylated)	>SOL	1.90E+04		
Molybdenum	NVP	NVP	70	70
Nickel	NVP	NVP	4	20
Selenium	NVP	NVP	10	10
Zinc	NVP	NVP	12.1 [1]	3000

Notes:

>SOL	Target acceptable risk not exceeded at theoretical solubility concentration
NR	No appropriate inhalation reference dose identified during review of toxicological data
#	No GAC for individual TPH fractions given that the compliance criteria is for sum TPH
na	Comprises multiple contaminants - no GAC derived
-	No water quality standard identified as suitable for deriving generic assessment criteria
NVP	Contaminant has low vapour pressure in groundwater
[1]	Adjusted to account for background concentrations

APPENDIX L

Waste Classification

ARCADIS

HazWasteOnline™

Waste Classification Report

JTXZB-G5ESS-3T745

Job name

Pioneer Park

Description/Comments

Asbestos detected in 4 samples but <0.1% when quantified. Sample tested for SVOCs and VOCs, all <LOD except those entered. Analysis for glycol suite undertaken on samples WS103 (0.6) and WS106 (0.5) but <LOD.

Project

Pioneer Park

Site

Leicester

Waste Stream Template

Pioneer Park

Classified by

Name:
Simon Hay
Date:
23/02/2018 09:58:09 UTC
Telephone:
01638 674564

Company:
Arcadis Consulting (UK) Ltd
3rd Floor, Charter House
62-68 Hills Road
Cambridge
CB2 1LA

Report

Created by: Simon Hay
Created date: 23/02/2018 09:58 UTC

Job summary

Classification of sample: TP102

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

Sample details

Sample Name:
TP102
Sample Depth:
0.30 m

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: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15.1 mg/kg	1.32	19.937 mg/kg	0.00199 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		163 mg/kg	1.7	277.021 mg/kg	0.0277 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.7 mg/kg	2.775	4.718 mg/kg	0.000472 %		
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	0.5 mg/kg	1.285	0.643 mg/kg	0.00005 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		56.8 mg/kg	1.462	83.016 mg/kg	0.0083 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		43 mg/kg	1.126	48.413 mg/kg	0.00484 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	137 mg/kg		137 mg/kg	0.0137 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		20.5 mg/kg	2.022	41.459 mg/kg	0.00415 %		
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**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				31	mg/kg	1.785	55.341	mg/kg	0.00553 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				143	mg/kg	1.245	177.994	mg/kg	0.0178 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
17		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
18		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
19		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
20		anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			204-371-1	120-12-7									
21		fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-912-4	206-44-0									
22		pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.07	mg/kg		0.07	mg/kg	0.000007 %		
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.07	mg/kg		0.07	mg/kg	0.000007 %		
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-883-8	191-24-2									
31		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
32		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
33		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
34		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
36		TPH (C6 to C40) petroleum group				49	mg/kg		49	mg/kg	0.0049 %		
				TPH									
37		asbestos				<1000	mg/kg		<1000	mg/kg	<0.1 %		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
								Total:	0.197 %		

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): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No free phase observed

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0049%)

Classification of sample: TP104

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

Sample details

Sample Name:
TP104
Sample Depth:
0.30 m

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: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12.7 mg/kg	1.32	16.768 mg/kg	0.00168 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		123 mg/kg	1.7	209.041 mg/kg	0.0209 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2 mg/kg	2.775	3.33 mg/kg	0.000333 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.5 mg/kg	13.43	20.145 mg/kg	0.00201 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.1 mg/kg	1.285	0.129 mg/kg	0.00001 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		38.5 mg/kg	1.462	56.27 mg/kg	0.00563 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		33 mg/kg	1.126	37.154 mg/kg	0.00372 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	18 mg/kg		18 mg/kg	0.0018 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		28 mg/kg	2.022	56.628 mg/kg	0.00566 %		
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

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				48	mg/kg	1.785	85.689	mg/kg	0.00857 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				74	mg/kg	1.245	92.109	mg/kg	0.00921 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
17		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
18		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
19		phenanthrene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
			201-581-5	85-01-8									
20		anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			204-371-1	120-12-7									
21		fluoranthene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			205-912-4	206-44-0									
22		pyrene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.07	mg/kg		0.07	mg/kg	0.000007 %		
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.09	mg/kg		0.09	mg/kg	0.000009 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.04	mg/kg		0.04	mg/kg	0.000004 %		
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				0.07	mg/kg		0.07	mg/kg	0.000007 %		
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-883-8	191-24-2									
31		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
32		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
33		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
34		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
36		TPH (C6 to C40) petroleum group				<38	mg/kg		<38	mg/kg	<0.0038 %		<LOD
				TPH									
37		asbestos				<0	mg/kg		<0	mg/kg	<0%		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
								Total:	0.0638 %		

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: TP105

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

Sample details

Sample Name:
TP105
Sample Depth:
0.10 m

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: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.4	mg/kg	1.32	11.091	mg/kg	0.00111 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		113	mg/kg	1.7	192.045	mg/kg	0.0192 %		
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		1.9	mg/kg	13.43	25.517	mg/kg	0.00255 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3	mg/kg	1.285	0.386	mg/kg	0.00003 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		39.8	mg/kg	1.462	58.17	mg/kg	0.00582 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		34	mg/kg	1.126	38.28	mg/kg	0.00383 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	25	mg/kg		25	mg/kg	0.0025 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		18.7	mg/kg	2.022	37.819	mg/kg	0.00378 %		
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**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				43	mg/kg	1.785	76.763	mg/kg	0.00768 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				110	mg/kg	1.245	136.919	mg/kg	0.0137 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
17		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
18		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
19		phenanthrene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			201-581-5	85-01-8									
20		anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-371-1	120-12-7									
21		fluoranthene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
			205-912-4	206-44-0									
22		pyrene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.31	mg/kg		0.31	mg/kg	0.000031 %		
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
			205-883-8	191-24-2									
31		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
32		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
33		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
34		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
36		TPH (C6 to C40) petroleum group				188	mg/kg		188	mg/kg	0.0188 %		
				TPH									
37		asbestos				<0	mg/kg		<0	mg/kg	<0%		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
								Total:	0.0798 %		

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): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No free phase observed

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0188%)

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 m

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: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		22.4	mg/kg	1.32	29.575	mg/kg	0.00296 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		180	mg/kg	1.7	305.913	mg/kg	0.0306 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.4	mg/kg	2.775	3.885	mg/kg	0.000389 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2	mg/kg	13.43	26.86	mg/kg	0.00269 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3	mg/kg	1.285	0.386	mg/kg	0.00003 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		52.1	mg/kg	1.462	76.147	mg/kg	0.00761 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		23	mg/kg	1.126	25.895	mg/kg	0.00259 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	39	mg/kg		39	mg/kg	0.0039 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		22.1	mg/kg	2.022	44.695	mg/kg	0.00447 %		
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

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				49	mg/kg	1.785	87.474	mg/kg	0.00875 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				126	mg/kg	1.245	156.834	mg/kg	0.0157 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				0.56	mg/kg		0.56	mg/kg	0.000056 %		
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
17		acenaphthene				0.34	mg/kg		0.34	mg/kg	0.000034 %		
			201-469-6	83-32-9									
18		fluorene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			201-695-5	86-73-7									
19		phenanthrene				1.67	mg/kg		1.67	mg/kg	0.000167 %		
			201-581-5	85-01-8									
20		anthracene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
			204-371-1	120-12-7									
21		fluoranthene				2.22	mg/kg		2.22	mg/kg	0.000222 %		
			205-912-4	206-44-0									
22		pyrene				2.1	mg/kg		2.1	mg/kg	0.00021 %		
			204-927-3	129-00-0									
23		benzo[a]anthracene				1.13	mg/kg		1.13	mg/kg	0.000113 %		
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				1.18	mg/kg		1.18	mg/kg	0.000118 %		
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				1.44	mg/kg		1.44	mg/kg	0.000144 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.56	mg/kg		0.56	mg/kg	0.000056 %		
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				1.08	mg/kg		1.08	mg/kg	0.000108 %		
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				0.75	mg/kg		0.75	mg/kg	0.000075 %		
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				0.84	mg/kg		0.84	mg/kg	0.000084 %		
			205-883-8	191-24-2									
31		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
32		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
33		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
34		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
36		TPH (C6 to C40) petroleum group				199	mg/kg		199	mg/kg	0.0199 %		
				TPH									
37		asbestos				<0	mg/kg		<0	mg/kg	<0%		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
								Total:	0.101 %		

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): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No free phase observed

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0199%)

Classification of sample: TP108

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

Sample details

Sample Name:
TP108
Sample Depth:
0.60 m

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: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		33.7	mg/kg	1.32	44.495	mg/kg	0.00445 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		117	mg/kg	1.7	198.844	mg/kg	0.0199 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.4	mg/kg	2.775	3.885	mg/kg	0.000389 %		
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	<0.1	mg/kg	1.285	<0.129	mg/kg	<0.00001 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		57.3	mg/kg	1.462	83.747	mg/kg	0.00837 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		<1	mg/kg	1.126	<1.126	mg/kg	<0.000113 %		<**LOD**
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	18	mg/kg		18	mg/kg	0.0018 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		25.6	mg/kg	2.022	51.774	mg/kg	0.00518 %		
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**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				64	mg/kg	1.785	114.252	mg/kg	0.0114 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				79	mg/kg	1.245	98.332	mg/kg	0.00983 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				0.04	mg/kg		0.04	mg/kg	0.000004 %		
			205-917-1	208-96-8									
17		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
18		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
19		phenanthrene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			201-581-5	85-01-8									
20		anthracene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
			204-371-1	120-12-7									
21		fluoranthene				0.86	mg/kg		0.86	mg/kg	0.000086 %		
			205-912-4	206-44-0									
22		pyrene				0.87	mg/kg		0.87	mg/kg	0.000087 %		
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.53	mg/kg		0.53	mg/kg	0.000053 %		
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.49	mg/kg		0.49	mg/kg	0.000049 %		
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.85	mg/kg		0.85	mg/kg	0.000085 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				0.64	mg/kg		0.64	mg/kg	0.000064 %		
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				0.46	mg/kg		0.46	mg/kg	0.000046 %		
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.09	mg/kg		0.09	mg/kg	0.000009 %		
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				0.43	mg/kg		0.43	mg/kg	0.000043 %		
			205-883-8	191-24-2									
31		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
32		benzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
33		toluene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
34		ethylbenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
36		TPH (C6 to C40) petroleum group				<38	mg/kg		<38	mg/kg	<0.0038 %		<LOD
				TPH									
37		asbestos				<0	mg/kg		<0	mg/kg	<0%		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
38		carbazole				0.04	mg/kg		0.04	mg/kg	0.000004 %		
			201-696-0	86-74-8									
										Total:	0.067 %		

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: TP109

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

Sample details

Sample Name:
TP109
Sample Depth:
0.50 m

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: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18.4 mg/kg	1.32	24.294 mg/kg	0.00243 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		211 mg/kg	1.7	358.598 mg/kg	0.0359 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		2 mg/kg	2.775	5.551 mg/kg	0.000555 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.3 mg/kg	13.43	17.459 mg/kg	0.00175 %		
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 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		60 mg/kg	1.462	87.693 mg/kg	0.00877 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
8	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 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	56 mg/kg		56 mg/kg	0.0056 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		25.2 mg/kg	2.022	50.965 mg/kg	0.0051 %		
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

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				50	mg/kg	1.785	89.259	mg/kg	0.00893 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				100	mg/kg	1.245	124.471	mg/kg	0.0124 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			205-917-1	208-96-8									
17		acenaphthene				0.28	mg/kg		0.28	mg/kg	0.000028 %		
			201-469-6	83-32-9									
18		fluorene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
			201-695-5	86-73-7									
19		phenanthrene				2.78	mg/kg		2.78	mg/kg	0.000278 %		
			201-581-5	85-01-8									
20		anthracene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
			204-371-1	120-12-7									
21		fluoranthene				7.6	mg/kg		7.6	mg/kg	0.00076 %		
			205-912-4	206-44-0									
22		pyrene				6.49	mg/kg		6.49	mg/kg	0.000649 %		
			204-927-3	129-00-0									
23		benzo[a]anthracene				4.16	mg/kg		4.16	mg/kg	0.000416 %		
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				3.36	mg/kg		3.36	mg/kg	0.000336 %		
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				4.27	mg/kg		4.27	mg/kg	0.000427 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				1.66	mg/kg		1.66	mg/kg	0.000166 %		
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				3.39	mg/kg		3.39	mg/kg	0.000339 %		
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				2.38	mg/kg		2.38	mg/kg	0.000238 %		
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.44	mg/kg		0.44	mg/kg	0.000044 %		
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				2.22	mg/kg		2.22	mg/kg	0.000222 %		
			205-883-8	191-24-2									
31		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
32		benzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
33		toluene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
34		ethylbenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
36		TPH (C6 to C40) petroleum group				131	mg/kg		131	mg/kg	0.0131 %		
				TPH									
37		asbestos				<0	mg/kg		<0	mg/kg	<0%		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
38		carbazole				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			201-696-0	86-74-8									
39		dibenzofuran				0.07	mg/kg		0.07	mg/kg	0.000007 %		
			205-071-3	132-64-9									
										Total:	0.103 %		

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): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No free phase observed

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0131%)

Classification of sample: TP110

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

Sample details

Sample Name:	LoW Code:
TP110	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
1.60 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19.2 mg/kg	1.32	25.35 mg/kg	0.00254 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		257 mg/kg	1.7	436.776 mg/kg	0.0437 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2 mg/kg	2.775	3.33 mg/kg	0.000333 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.6 mg/kg	13.43	21.488 mg/kg	0.00215 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.1 mg/kg	1.285	0.129 mg/kg	0.00001 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		50.8 mg/kg	1.462	74.247 mg/kg	0.00742 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<**LOD**
8	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 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	14 mg/kg		14 mg/kg	0.0014 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		32.5 mg/kg	2.022	65.728 mg/kg	0.00657 %		
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**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				47	mg/kg	1.785	83.904	mg/kg	0.00839 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				65	mg/kg	1.245	80.906	mg/kg	0.00809 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
17		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
18		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
19		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
20		anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			204-371-1	120-12-7									
21		fluoranthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0									
22		pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.06	mg/kg		<0.06	mg/kg	<0.000006 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-883-8	191-24-2									
31		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
32		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
33		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
34		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
36		TPH (C6 to C40) petroleum group				<38	mg/kg		<38	mg/kg	<0.0038 %		<LOD
				TPH									
37		asbestos				<0	mg/kg		<0	mg/kg	<0%		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
								Total:	0.0863 %		

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: TP111

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

Sample details

Sample Name:
TP111
Sample Depth:
0.30 m

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: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		20.4 mg/kg	1.32	26.935 mg/kg	0.00269 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		93 mg/kg	1.7	158.055 mg/kg	0.0158 %		
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		1.2 mg/kg	13.43	16.116 mg/kg	0.00161 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.1 mg/kg	1.285	0.129 mg/kg	0.00001 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		31.7 mg/kg	1.462	46.331 mg/kg	0.00463 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	19.14 mg/kg	0.00191 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	28 mg/kg		28 mg/kg	0.0028 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		29.9 mg/kg	2.022	60.47 mg/kg	0.00605 %		
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

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				45	mg/kg	1.785	80.333	mg/kg	0.00803 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				91	mg/kg	1.245	113.269	mg/kg	0.0113 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
17		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
18		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
19		phenanthrene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			201-581-5	85-01-8									
20		anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			204-371-1	120-12-7									
21		fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-912-4	206-44-0									
22		pyrene				0.09	mg/kg		0.09	mg/kg	0.000009 %		
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.07	mg/kg		0.07	mg/kg	0.000007 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-883-8	191-24-2									
31		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
32		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
33		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
34		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
36		TPH (C6 to C40) petroleum group				<38	mg/kg		<38	mg/kg	<0.0038 %		<LOD
				TPH									
37		asbestos				<1000	mg/kg		<1000	mg/kg	<0.1 %		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
								Total:	0.159 %		

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: TP113

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

Sample details

Sample Name:
TP113
Sample Depth:
0.90 m

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: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14.8	mg/kg	1.32	19.541	mg/kg	0.00195 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		175	mg/kg	1.7	297.416	mg/kg	0.0297 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1	mg/kg	2.775	2.775	mg/kg	0.000278 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.6	mg/kg	13.43	21.488	mg/kg	0.00215 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.1	mg/kg	1.285	<0.129	mg/kg	<0.00001 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		47	mg/kg	1.462	68.693	mg/kg	0.00687 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10	mg/kg	1.126	11.259	mg/kg	0.00113 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	35	mg/kg		35	mg/kg	0.0035 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		22.2	mg/kg	2.022	44.898	mg/kg	0.00449 %		
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**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				29	mg/kg	1.785	51.77	mg/kg	0.00518 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				46	mg/kg	1.245	57.257	mg/kg	0.00573 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
17		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
18		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
19		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
20		anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			204-371-1	120-12-7									
21		fluoranthene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			205-912-4	206-44-0									
22		pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.02	mg/kg		0.02	mg/kg	0.000002 %		
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-883-8	191-24-2									
31		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
32		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
33		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
34		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
36		TPH (C6 to C40) petroleum group				<38	mg/kg		<38	mg/kg	<0.0038 %		<LOD
				TPH									
37		asbestos				<1000	mg/kg		<1000	mg/kg	<0.1 %		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
								Total:	0.165 %		

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: WS101

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

Sample details

Sample Name:
WS101
Sample Depth:
0.30-0.40 m

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: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17.1	mg/kg	1.32	22.578	mg/kg	0.00226 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		347	mg/kg	1.7	589.732	mg/kg	0.059 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		3.9	mg/kg	2.775	10.824	mg/kg	0.00108 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.3	mg/kg	13.43	17.459	mg/kg	0.00175 %		
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 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		43	mg/kg	1.462	62.847	mg/kg	0.00628 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		53	mg/kg	1.126	59.672	mg/kg	0.00597 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	95	mg/kg		95	mg/kg	0.0095 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		39.7	mg/kg	2.022	80.29	mg/kg	0.00803 %		
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**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				61	mg/kg	1.785	108.896	mg/kg	0.0109 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				1.3	mg/kg	1.245	1.618	mg/kg	0.000162 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				146	mg/kg	1.353	197.609	mg/kg	0.0198 %		
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			205-917-1	208-96-8									
17		acenaphthene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
			201-469-6	83-32-9									
18		fluorene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			201-695-5	86-73-7									
19		phenanthrene				1.26	mg/kg		1.26	mg/kg	0.000126 %		
			201-581-5	85-01-8									
20		anthracene				0.43	mg/kg		0.43	mg/kg	0.000043 %		
			204-371-1	120-12-7									
21		fluoranthene				3.17	mg/kg		3.17	mg/kg	0.000317 %		
			205-912-4	206-44-0									
22		pyrene				2.65	mg/kg		2.65	mg/kg	0.000265 %		
			204-927-3	129-00-0									
23		benzo[a]anthracene				1.08	mg/kg		1.08	mg/kg	0.000108 %		
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				1.39	mg/kg		1.39	mg/kg	0.000139 %		
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				2	mg/kg		2	mg/kg	0.0002 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.78	mg/kg		0.78	mg/kg	0.000078 %		
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				1.6	mg/kg		1.6	mg/kg	0.00016 %		
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				1.16	mg/kg		1.16	mg/kg	0.000116 %		
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				1.12	mg/kg		1.12	mg/kg	0.000112 %		
			205-883-8	191-24-2									
31		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		603-181-00-X	216-653-1	1634-04-4									
32		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
33		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
34		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
35		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**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]									
36		TPH (C6 to C40) petroleum group				281	mg/kg		281	mg/kg	0.0281 %		
				TPH									
37		asbestos				<1000	mg/kg		<1000	mg/kg	<0.1 %		<**LOD**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
								Total:	0.255 %		

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): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No free phase observed

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0281%)

Classification of sample: WS103

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

Sample details

Sample Name:	LoW Code:
WS103	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.60-0.70 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		39.2 mg/kg	1.32	51.757 mg/kg	0.00518 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		146 mg/kg	1.7	248.13 mg/kg	0.0248 %		
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		1.1 mg/kg	13.43	14.773 mg/kg	0.00148 %		
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 in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		54.7 mg/kg	1.462	79.947 mg/kg	0.00799 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	14.637 mg/kg	0.00146 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	8 mg/kg		8 mg/kg	0.0008 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		22.7 mg/kg	2.022	45.909 mg/kg	0.00459 %		
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**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				60	mg/kg	1.785	107.111	mg/kg	0.0107 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				65	mg/kg	1.245	80.906	mg/kg	0.00809 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16	•	acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
17	•	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
18	•	fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
19	•	phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
20	•	anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			204-371-1	120-12-7									
21	•	fluoranthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0									
22	•	pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.06	mg/kg		<0.06	mg/kg	<0.000006 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
28	•	indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30	•	benzo[ghi]perylene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-883-8	191-24-2									
31	•	TPH (C6 to C40) petroleum group				<38	mg/kg		<38	mg/kg	<0.0038 %		<LOD
				TPH									
32		asbestos				<0	mg/kg		<0	mg/kg	<0%		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
										Total:	0.0697 %		

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: WS106

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

Sample details

Sample Name:	LoW Code:
WS106	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.50-0.60 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% 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	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		37.7 mg/kg	1.32	49.776 mg/kg	0.00498 %		
2	barium { barium sulfate }		231-784-4	7727-43-7		216 mg/kg	1.7	367.096 mg/kg	0.0367 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		2 mg/kg	2.775	5.551 mg/kg	0.000555 %		
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	<0.1 mg/kg	1.285	<0.129 mg/kg	<0.00001 %		**<LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		48.9 mg/kg	1.462	71.47 mg/kg	0.00715 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		**<LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		53 mg/kg	1.126	59.672 mg/kg	0.00597 %		
9	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	71 mg/kg		71 mg/kg	0.0071 %		
10	nickel { nickel(II) carbonate }	028-010-00-0	222-068-2 [1] 240-408-8 [2] 265-748-4 [3] 235-715-9 [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]		27.4 mg/kg	2.022	55.414 mg/kg	0.00554 %		
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**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
12		vanadium { divanadium pentaoxide; vanadium pentoxide }				75	mg/kg	1.785	133.889	mg/kg	0.0134 %		
		023-001-00-8	215-239-8	1314-62-1									
13		zinc { zinc oxide }				176	mg/kg	1.245	219.07	mg/kg	0.0219 %		
		030-013-00-7	215-222-5	1314-13-2									
14		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<**LOD**
		080-010-00-X	231-299-8	7487-94-7									
15		naphthalene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				0.31	mg/kg		0.31	mg/kg	0.000031 %		
			205-917-1	208-96-8									
17		acenaphthene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
			201-469-6	83-32-9									
18		fluorene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			201-695-5	86-73-7									
19		phenanthrene				1.75	mg/kg		1.75	mg/kg	0.000175 %		
			201-581-5	85-01-8									
20		anthracene				0.94	mg/kg		0.94	mg/kg	0.000094 %		
			204-371-1	120-12-7									
21		fluoranthene				4.84	mg/kg		4.84	mg/kg	0.000484 %		
			205-912-4	206-44-0									
22		pyrene				4.59	mg/kg		4.59	mg/kg	0.000459 %		
			204-927-3	129-00-0									
23		benzo[a]anthracene				2.74	mg/kg		2.74	mg/kg	0.000274 %		
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				2.53	mg/kg		2.53	mg/kg	0.000253 %		
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				4.46	mg/kg		4.46	mg/kg	0.000446 %		
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				1.74	mg/kg		1.74	mg/kg	0.000174 %		
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				3.68	mg/kg		3.68	mg/kg	0.000368 %		
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				2.88	mg/kg		2.88	mg/kg	0.000288 %		
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.39	mg/kg		0.39	mg/kg	0.000039 %		
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				2.83	mg/kg		2.83	mg/kg	0.000283 %		
			205-883-8	191-24-2									
31		TPH (C6 to C40) petroleum group				423	mg/kg		423	mg/kg	0.0423 %		
				TPH									
32		asbestos				<1000	mg/kg		<1000	mg/kg	<0.1 %		<**LOD**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
33		carbazole				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-696-0	86-74-8									
34		dibenzofuran				0.06	mg/kg		0.06	mg/kg	0.000006 %		
			205-071-3	132-64-9									
										Total:	0.251 %		

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): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No free phase observed

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0423%)

Appendix A: Classifier defined and non CLP determinands

barium sulfate (EC Number: 231-784-4, CAS Number: 7727-43-7)

Conversion factor: 1.7
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: R36/37/38 , R33 , R20/22
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , STOT RE 2 H373 , Acute Tox. 4 H302 , Acute Tox. 4 H332

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: C R35 , C R34 , T+ R26/28 , R14
Hazard Statements: Skin Corr. 1B H314 , Skin Corr. 1A H314 , Acute Tox. 2 H300 , Acute Tox. 2 H330 , EUH014

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: R61 , R60 , R50/53 , R43 , R42 , R38 , R37 , R36 , R22 , R20
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

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

CLP index number: 029-002-00-X
Description/Comments: M-factor for long-term aquatic hazard not included as per paragraph (5), ATP9
Data source: Regulation (EU) 2016/1179 of 19 July 2016 (ATP9)
Additional Risk Phrases: N R50/53 >= 0.25 %, N R50/53
Additional Hazard Statement(s): None.
Reason for additional Hazards Statement(s)/Risk Phrase(s):
10/10/2016 - N R50/53 >= 0.25 % risk phrase sourced from: WM3 v1 still uses ecotoxic risk phrases
10/10/2016 - N R50/53 risk phrase sourced from: WM3 v1 still uses ecotoxic risk phrases

lead compounds with the exception of those specified elsewhere in this Annex (worst case)

CLP index number: 082-001-00-6
Description/Comments: Worst Case: IARC considers lead compounds Group 1; Carcinogenic to humans; Lead REACH Consortium considers some lead compounds Carcinogenic category 1A
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03/06/2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html (worst case lead compounds). Review date 29/09/2015

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: R38 , R37 , R36 , R27 , R26 , R22
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

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: N R51/53 , N R50/53 , R38 , R37 , R36
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

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 Chronic 1 H410 , Aquatic Acute 1 H400

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: N R50/53 , R43 , R40 , R38 , R37 , R36 , R22
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

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: N R50/53 , R43 , R38 , R37 , R36
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

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: N R50/53 , Xn R22
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

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: N R50/53 , Xi R36/37/38
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

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

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 Chronic 1 H410 , Aquatic Acute 1 H400

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

CLP index number: 601-023-00-4
Description/Comments:
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

- **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: R65 , R63 , R51/53 , R46 , R45 , R10
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

- **carbazole** (EC Number: 201-696-0, CAS Number: 86-74-8)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02/03/2017
Risk Phrases: R50/53
Hazard Statements: Acute Tox. 3 H301 , Acute Tox. 3 H311 , Acute Tox. 3 H331 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Carc. 2 H351 , Muta. 2 H341 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315 , Acute Tox. 4 H302

- **dibenzofuran** (EC Number: 205-071-3, CAS Number: 132-64-9)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02/03/2017
Risk Phrases: R51/53
Hazard Statements: Aquatic Chronic 2 H411 , Acute Tox. 4 H332 , Acute Tox. 4 H312 , Acute Tox. 4 H302

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

barium {barium sulfate}

Most likely species based on site usage

beryllium {beryllium oxide}

Worst case species based on hazard statements

boron {boron tribromide/trichloride/trifluoride (combined)}

Combined

cadmium {cadmium sulfide}

Worst case species based on hazard statements

chromium in chromium(III) compounds {chromium(III) oxide}

Need Chromium III

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

no Cr VI >LOD

nickel {nickel(II) carbonate}

Worst case species based on hazard statements

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on hazard statements

vanadium {divanadium pentaoxide; vanadium pentoxide}

test

zinc {zinc oxide}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition, May 2015
HazWasteOnline Classification Engine Version: 2018.30.3501.7153 (30 Jan 2018)
HazWasteOnline Database: 2018.30.3501.7153 (30 Jan 2018)

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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