



**BROWNFIELD
SOLUTIONS LTD**

GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

UNITED LIVING

Halsnead Gardens

Phase II Geo-Environmental Assessment Report

MAS/C5980/13951 Rev A

May 2025

EXECUTIVE SUMMARY	
Location and Brief Site Description	The site measures circa 7.30 hectares and is largely open fields with thick vegetation. There are some existing structures in the northwestern area of the site. Three buildings are still occupied, and another appears to be derelict farm buildings.
Ground Conditions	Generalised ground conditions from the ground investigation comprise (top down): • Made ground topsoil encountered from ground level to between 0.70m and 1.00m bgl. • Made ground encountered from 0.30m to between 0.70m and 2.10m bgl. • Natural strata encountered from 0.30m bgl to between 0.50m and 4.50m bgl. • Solid geology encountered from 0.80m bgl to 40.00m bgl. • Groundwater recorded between 0.70m and 3.90m bgl.
Human Health - Soils Contamination	• Localised exceedances in the form of arsenic and lead were encountered within WS103. • No further exceedances were identified across the remainder of the site.
Controlled Waters – Surface and Groundwater Contamination	• The overall risk to controlled waters is considered very low to low.
Ground Gas	Based on the monitoring results, the site is classified as CS1 – no protection is required from made ground and natural gas sources, though mine gas will still need considering at the drill and grout remedial stage.
Outline Remedial Strategy	Subject to regulatory approval, the following outline remedial strategy is recommended: • Removal of heavy metal hotspot at WS103, or incorporation of localised clean cover system. • Verification of the above with validation reports produced.
Waste	Made ground –classified as non-hazardous. Natural – classified as non-hazardous.
Foundations and Floor Slabs	Strip foundations are considered the most suitable for this development. Based on the medium volume change potential, foundations should be placed at a minimum of 0.90m bgl into the natural cohesive deposits and deepened near trees and hedges. Allowable bearing capacities are 230 kN/m ² at 0.90m bgl, increasing to 300 kN/m ² from 1.50m bgl. This adopts a factor of safety of 3 which should limit settlements to within acceptable limits. Localised granular sand strata were encountered in eight locations across the site as detailed in section 5.4. In these locations, the sand was found to be directly underlain by solid bedrock. Therefore, foundations in these locations should be placed upon the granular sand strata, where unacceptable differential settlement would not be anticipated. At 0.80m bgl, an allowable bearing capacity not exceeding 150 kN/m ² may be assumed. This adopts a factor of safety of 3 which should limit settlements to within acceptable limits. Suspended or ground bearing floor slabs may be adopted.
Concrete Classification	Made ground and Solid Geology – DS-1 AC-1s conditions prevail. Natural Superficial – DS2 AC-1s conditions prevail.
Highways Design	Made Ground CBR – 5% Superficial Strata CBR – cohesive/fine soils– 5% The above should be confirmed by in-situ testing at formation level by a specialist geotechnical engineer during construction.
Site Drainage	Drainage to soakaways is considered unsuitable for this site due to no drainage during testing.
Mining Risk	In accordance with CIRIA C758 and the 10t criterion, there is a risk on the site from historic coal mining activities. Drilling and grouting will be required to enable development across the site, along with the suitable capping or grouting, or both, of the two onsite mine shafts.
Further Work	The following further works will be required to progress to the construction phase: • Tree survey by a qualified arboriculturist. • Demolition survey, if required. • Design of the Drill and Grout specification. • Detailed foundation design, including foundation zonation plan and depth schedule. • Design of Remedial Strategy and confirmation with the Local Authority, NHBC, and the Mining Remediation Authority, if required. • Production of Materials Management Plan (MMP) under the CL:AIRE DoWCoP, if required. • Implementation of the Drill and Grout Specification, and verification reporting upon completion. • Implementation of the Remedial Strategy and verification of the remedial works, if required.

This executive summary should be read in conjunction with the full report, reference MAS/C5980/13951 Rev A and not as a standalone document. Report template version 4.5.

PROJECT QUALITY CONTROL DATA SHEET

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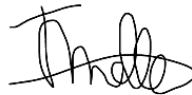
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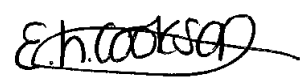
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23076/255	-	Proposed Development Layout Plan
C5980/01	A	Site Location Plan
C5980/02	-	Site Features Plan
C5980/03	-	Exploratory Hole Location Plan

APPENDICES	
Appendix	Title
Photographs	Mine Shaft Investigation Photoboard
Appendix A	BSL Methodology and Guidance
Appendix B	Exploratory Hole Logs
Appendix C	Chemical Testing Results
Appendix D	Geotechnical Testing Results
Appendix E	Monitoring Results
Appendix F	Waste Assessment Report

1.0 INTRODUCTION

1.1 Context

This report describes a Phase II Geo-Environmental Assessment carried out by Brownfield Solutions Limited (BSL) for United Living on a site off Main Drive, Whiston, Prescot, and has been completed in general accordance with the following guidance:

-
- Environment Agency guidance - Land Contamination: Risk Management (LCRM).
 - BS 10175:2011+A2:2017 Investigation of Potentially Contaminated Sites.
 - BS5930: 2015+A1:2020 Code of Practice for Ground Investigations.
 - BS EN 1997-1:2004+A1:2013 Eurocode 7. Geotechnical design. General rules plus UK National Annex.
 - BS EN 1997-2:2007 Eurocode 7 Geotechnical design. Ground investigation and testing plus UK National Annex.
 - NHBC Standards. Chapter 4.1: Land Quality - Managing Ground Conditions.
-

Definitions of terms and acronyms used within this report is presented in Section 11.0.

1.2 Proposed Development

The proposed development is for a residential end use comprising 235 residential houses, containing a mix of two storey semi-detached and detached dwellings along with 2.5 storey townhouses and mews, with associated private gardens, highways, public open space (POS) areas and infrastructure as shown on the proposed development plan, drawing No. 23076/255 provided to BSL by the client.

1.3 Previous Reports

This report should be read in conjunction with the BSL Phase I Geo-Environmental Assessment Report (ref: JL/C5980/13829) issued in January 2025.

1.4 Objectives and Scope

The objectives of this report are to determine the geo-environmental setting and ground conditions of the site, highlighting potential risks and areas of concern that may govern the development under the current planning regime.

The factual and interpretive Phase II sections of this report are produced in general accordance with the recommendations for a Tier 2 Generic Quantitative Risk Assessment as described in LCRM guidance. This assessment is also intended to fulfil the requirements of a Ground Investigation Report (GIR) as detailed in BS EN 1997-2:2007.

Following the Desk Study, an exploratory intrusive investigation was undertaken to confirm the findings of the preliminary CSM and risk assessment and meet any objectives that had not been satisfied. The exploratory investigation was undertaken using trial pitting, window sampling, rotary drilling, ground gas and groundwater monitoring, laboratory chemical and geotechnical testing, with reporting on the findings.

A summary of previous investigations carried out at the site has also been undertaken.

1.5 Limitations

This assessment has been prepared in accordance with the relevant current legislative framework, guidance and risk assessment methodology as outlined in Appendix A. BSL is not liable for any subsequent changes in the guidance and legislation.

The findings and opinions conveyed via this report are based on information obtained from a number of sources as detailed within this report, BSL have assumed this information is correct and reliable. Nevertheless, BSL cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

BSL have used reasonable skill, care and diligence for the investigation of the site and the production of this report. There may be other conditions prevailing on the site which are outside the scope of work and have not been highlighted by this assessment and therefore have not been considered by this report. Responsibility cannot be accepted for such site conditions not revealed by the assessment.

This report has been prepared for the sole use and reliance of the Client, United Living. No other third parties may rely upon or reproduce the contents of this report without the written permission of Brownfield Solutions Ltd (BSL). If any unauthorised third party comes into possession of this report, they rely on it at their own risk and BSL do not owe them any Duty of Care. This report may not be relied upon by the client or submitted to a third party for their reliance for the purposes of valuation, mortgage, insurance and regulatory approval, until all invoices have been settled in full.

The investigation carried out on the site has been conducted to provide the best information on the ground conditions within site access and budgetary constraints. The inherent variation of ground conditions allows only for definition of the actual conditions at the locations and depths of exploratory locations at the time of the investigation. Different ground conditions may exist that have not been identified within this investigation.

The recommendations in this report assume that ground levels will remain as existing, unless stated otherwise within the report. If there is to be any re-profiling (e.g. to create development platforms or flood defences) then the recommendations may not apply.

The groundwater results described are only representative of the dates on which they were recorded, and levels may vary seasonally (e.g. due to changes in weather).

This assessment has been based on the proposed planning layouts provided. Any subsequent change to the planning layout may have an impact on the validity of recommendations made within this report. Furthermore, new information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

Although every effort has been made to position exploratory holes in the least sensitive areas of the site, exploratory hole positions were located approximately as part of this investigation and no guarantee can be given as to their accuracy. Consideration should be given to the possibility that exploratory holes excavated as part of this investigation and indeed any previous ground investigation work by others may be encountered beneath or within the influence of individual foundations. BSL cannot be held responsible for structural failures caused by the location of foundations of any form of structure within the influence of exploratory holes.

Where it has not been possible to reasonably use an EC7 compliant investigation technique, a practical alternative has been adopted to obtain indicative soil parameters and any interpretation is based upon engineering experience, local precedent where applicable and relevant published information.

The chemical testing carried out for this report was not scoped to comply with the requirements of the water supply company and further work may be required, unless otherwise stated.

Notwithstanding site observations concerning the presence or otherwise of archaeological issues, asbestos-containing materials (ACM) or invasive weeds (e.g. Japanese knotweed), this report does not constitute a formal survey of these potential issues.

Asbestos in structures was not covered in this report. It should be noted that an asbestos demolition survey will be required prior to any demolition of structures. If asbestos is present in soils, these will need to be dealt with in accordance with the Control of Asbestos Regulations (CAR) 2012.

The site plans enclosed in this report should not be scaled off. Any site boundary line depicted on plans does not imply legal ownership of land.

Any recommendations made in this report should be confirmed with the Regulatory Authorities prior to implementation to ensure compliance.

2.0 THE SITE

2.1 Location

The site is located off Main Drive, Whiston, L35 3QF, centred on National Grid Reference 347186, 390306 as shown on the Site Location Plan, Drawing No. C5980/01.

2.2 Site Description

A site reconnaissance survey was carried out at the site on the 14th January 2025. The main site features and potential issues identified are detailed below and are shown on the Site Features Plan, Drawing No. C5980/02. A selection of photographs from the site walkover are presented to the rear of this report.

Feature	Description
Site Area	The site is approximately 7.30 hectares.
Site Access	Access to the site is gained via open access off Main Drive to the south.
Current Land Use and Site Features	The site is largely comprised of open fields with thick vegetation present in the south-west corner and in the centre of the western portion of site. There is a shallow pond approximately 4m by 8m, located within the north-west of the site. Evidence of underground services onsite includes two water chambers / above ground manholes present in the western area of the site and spray paint indicating the potential presence of underground services was seen to be running along the southern border of the site, parallel to the road. A suspected mine shaft was noted toward the south-east of the site, evidenced by a slight depression in the field in the approximate location of a recorded mine shaft. A number of gas monitoring wells were noted toward the west of the site. There are some existing structures in the north-western area of the site. Three buildings are still occupied, and another appears to be a derelict farm building.
Potential Sources of Gross Contamination	No potential sources of gross contamination were identified.
Vegetation / Ecology	The site is generally covered with grass. There are semi-mature and mature trees throughout the south-west and north-west of the site and sporadically along the sites north, south and eastern boundaries. In addition, there are patches of dense brambles in the north-west and along the sites southern border.
Topography	The site generally slopes from the south-west to the north-east with a gentle gradient. While the north-west section of the site is mostly flat, access to this area is only possible from the southern portion of the site. The southern area includes a steep slope running from the south-east to the north-west, near to the existing pond. The site generally resides at circa 47m AOD.
Site Boundaries	The north the site is bound by wooden fencing separating the site from residential gardens, and heras fencing, separating the site from a construction site on the other side. To the east and west the site is bound by a mix of dense vegetation, metal wire fencing, and heras fencing. The south of the site is bordered by Main Drive.
Surrounding Area	The site is set within a residential area. A construction site is present to the north and east for the development of a residential housing estate. Residential homes are present to the south and playing fields present to the west, with homes beyond these.

3.0 SUMMARY OF PREVIOUS REPORTS

A summary of the relevant points from the Desk Study completed by BSL (reference JL/C5980/13829) is presented below:

- The site has had minimal previous developments since the earliest map of 1850 comprising of residential dwellings, agricultural outbuildings, and two mine shafts. The majority of the site has largely remained undeveloped, comprising open fields, with some ponds present across historical mapping records.
- A pump house, tanks, ponds, and electrical substation were in close proximity of the site.
- Geology comprises Glacial Till deposits (Secondary Aquifer – Undifferentiated) over Pennine Middle Coal Measures Formation (Secondary A Aquifer).
- A fault is shown to traverse the northwestern corner of the site in a north to south direction. However, any movements associated with this fault should now have stopped.
- The site is located within a Coal Mining Area, formerly worked for coal. The property is in a surface area that could be affected by underground mining in 4 seams of coal at 146m to 391m depth, last worked in 1903. Any movement in the ground due to coal mining activity should have stopped. The property is in an area where the Authority believe there is coal at or close to the surface and may have been worked at some time in the past.
- The site is in an area of former shallow coal mine workings.
- The nearest watercourse is unnamed, located circa 35m south-west of the site.
- There is a potential for groundwater flooding on site, with a low risk rating.
- The risk to human health is considered to be low to moderate / low.
- The risk from ground gas is considered to be moderate / low to moderate and the site is not located in an area requiring radon protection measures.
- The risk to controlled waters is low.
- The site is located in the UXO low risk zone.
- Recommendations were for an appropriate Phase II ground investigation to be carried out to confirm the identified risks and obtain information for preliminary design.

4.0 METHOD OF INVESTIGATION

4.1 Objectives

To confirm the risks to the identified receptors and confirm the ground conditions in respect to the identified geotechnical and geo-environmental risks, an appropriate intrusive investigation was undertaken as per the recommendations of the Phase I Desk Study Assessment.

The aim of the fieldwork was to:

- Investigate ground conditions on the site and the potential need for detailed investigation.
- Install standpipes to allow future monitoring.
- Undertaking soil infiltration rate testing.
- Assess the potential contamination on the site and obtain samples for contamination screening.
- Assess the potential impact of any contamination on controlled waters.
- Obtain geotechnical information on the ground conditions at the site for preliminary foundation design and preliminary pavement design purposes.
- Give an assessment of the geo-environmental risks associated with redevelopment of the site.
- Assess the potential for instability caused by historical coal extraction.

4.2 Site Works

The following site works have been undertaken as part of the intrusive investigation between the dates of 27th January and 12th February 2025.

Method	No.	Range Depths (m bgl)	Purpose
Trial pits – Tracked excavator	30	1.90 – 4.00	Establish general ground conditions and gain good coverage. Undertake hand shear vanes in cohesive strata to determine soil strengths for preliminary foundation design.
Trial trench – Tracked excavator	2	2.30 – 5.50	Establish general ground conditions and gain good coverage. Investigate the presence and depths of coal seams and potential mine entries / shafts.
Window sample boreholes – Tracked WS rig	13	2.28 – 4.38	Establish general ground conditions on site. Allow Standard Penetration Tests (SPTs) to be carried out and obtain samples for contamination and geotechnical and testing. Determine soil strengths/densities for preliminary foundation design. Installation of ground gas and water monitoring wells.
Lightweight Deflectometer (LWD)	18	-	Obtain indicative CBR values for highways/pavement design.
Infiltration tests (in Trial Pits)	2	1.30 – 3.00	Obtain infiltration rates for drainage design.
Rotary open boreholes	16	10.20 – 40.00	Establish deeper ground conditions and gain good coverage. Investigate the presence and depths of coal seams and potential mine workings. Installation of ground gas and water monitoring wells.

The surveyed locations of the exploratory holes are indicated on the Exploratory Hole Location Plan, Drawing No C5980/03. The exploratory hole logs are presented in Appendix B.

The exploratory holes were logged by an experienced geo-environmental engineer in general accordance with the following guidance:

- BS 5930:2015+A1:2020 Code of Practice for Site Investigations.
- BS EN 14688-1:2018 Geotechnical Investigation and Testing – Identification and classification of soil.
- BS EN ISO 14689:2018 Geotechnical investigation and testing – Identification and classification of rock.

4.3 Sampling Strategy

Representative samples were taken from exploratory holes at regular intervals to assist in the identification of the soils and to allow subsequent laboratory testing. They were stored and transported in general accordance with BS 10175:2011+A2:2017.

The type of sample was dependent upon the stratum and the purpose of analysis in accordance with current environmental and geotechnical guidance. The distribution of samples taken across the site is recorded on the exploratory logs.

Investigatory hole locations were determined by reference to the conditions identified in the preliminary risk assessment. Certain specific features such as mine shafts were targeted for specific investigation, but a reasonably even spacing was used for the remainder of the site. No specific sampling statistics or grid were utilised in this instance.

4.4 Laboratory Testing

As part of the initial assessment for potential contamination of the site, selected samples were taken for the purpose of chemical contamination testing.

In the absence of particularly contaminative processes on site and the lack of visual evidence of potential hydrocarbon impactation representative soil samples were screened for the following general suite of determinands at a UKAS approved laboratory:

Determinand	No of Samples
BSL Default Soil Suite: Arsenic, Cadmium, Chromium (III), Chromium (VI), Copper, Nickel, Mercury, Lead, Zinc, Selenium, speciated polycyclic hydrocarbons (PAH 16), water soluble sulphate (2:1 Extract), soil organic matter (SOM) and pH.	15
Petroleum Hydrocarbons (TPH CWG) inc BTEX and MTBE.	5
Asbestos Screen and ID.	5
Waste Acceptance Criteria (WAC).	2
Calorific Value by Bomb Calorimeter	2
Loss On Ignition (LOI)	2

The Chemical Laboratory Testing Results are presented in Appendix C.

Representative disturbed samples were obtained for all soil types encountered. Selected samples were scheduled for testing at an approved laboratory in accordance with BS 1377 'Method of Test for Soils for Civil Engineering Purposes' and BS EN ISO 17892- Parts 1-12:2018 'Geotechnical investigation and testing. Laboratory testing of soil'.

The following tests were scheduled for geotechnical purposes:

Description	No of Samples
Plasticity Index Analysis.	10
pH & Water Soluble Sulphate (2:1 Extract)	10
SD1 BRE Full Suite	5

The Geotechnical Laboratory Testing Results are presented in Appendix D.

4.5 Monitoring

Ground gas and ground water monitoring standpipes were installed in a number of boreholes as detailed in the table further below.

6 monitoring visits have been undertaken to date out of 6 proposed as part of the current scope, in line with the recommendations of BS8485.

All gas monitoring was undertaken using either a GA5000 or GFM436 infrared gas meter with integral electronic flow analyser.

Flow measurements on each standpipe (l/hr) were taken. Measurements of the percentage volume in air (%v/v) of oxygen (O₂), carbon dioxide (CO₂) and methane (CH₄) were recorded in addition to the percentage Lower Explosive Limit (%LEL) of methane (Note: 100% LEL equates to 5% by volume), the atmospheric pressure (mb) and average temperature during the visit (°C).

Standpipes were constructed in general accordance with the relevant guidance. A summary of the installation construction is presented in the table below:

Location	Internal Diameter Pipe	Response Zone (m bgl)	Targeted Strata	Purpose
WS101	35mm PVC	0.60 – 3.60	Clay	Ground Gas & Groundwater
WS103	35mm PVC	1.50 – 3.00	Clay	Ground Gas & Groundwater
WS105	35mm PVC	0.50 – 2.50	Clay and Mudstone	Ground Gas & Groundwater
WS106	35mm PVC	0.50 – 2.50	Clay, Sand, and Sandstone	Ground Gas & Groundwater
WS108	35mm PVC	0.50 – 2.50	Clay and Mudstone	Ground Gas & Groundwater
WS109	35mm PVC	0.50 – 2.00	Clay and Sandstone	Ground Gas & Groundwater
RO103	50mm HDPE	5.00 – 10.00	Mudstone	Ground Gas & Groundwater
RO114	50mm HDPE	5.00 – 9.00	Mudstone	Ground Gas & Groundwater

The gas monitoring visits recorded peak and steady state conditions. Peak results are those that occur on opening the valve on the borehole tap. Steady state conditions are those that occur a period of time afterwards when the initial (accumulated) gases have been purged from the borehole.

Ground gas monitoring results are presented in Appendix E of this report.

5.0 GROUND CONDITIONS

5.1 Summary

A brief summary of the ground conditions encountered is presented in the table below:

Stratum	Range Depths - Top (m bgl)	Range Depths - Bottom (m bgl)	Range Thickness' (m)	Brief Description
Made Ground	0.30 – 1.00	0.70 – 2.10	0.30 – 1.40	Sandy gravelly CLAY.
Made Ground Topsoil	GL	0.30 – 0.70	0.30 – 0.70	Sandy gravelly CLAY.
	GL	0.60 – 1.00	0.60 – 1.00	Sandy GRAVEL.
Natural Topsoil	GL	0.30 – 0.70	0.30 – 0.70	CLAY with minor constituents of sands and gravels.
Natural Superficial Strata	0.30 – 3.90	0.50 – 4.50	0.10 – 4.20	CLAY with minor constituents of sands and gravels.
	0.40 – 0.80	0.60 – 1.90	0.20 – 1.30	SANDS.
Solid Geology	0.80 – 38.40	1.90 – 39.10	0.20 – 3.00	COAL.
	3.50 – 24.30	5.20 – 26.40	1.70 – 3.00	SILTSTONE.
	0.80 – 3.30	2.00 – 13.10	0.20 – 9.80	SANDSTONE.
	1.50 – 39.10	2.00 – 40.00	0.05 – 16.20	MUDSTONE.
	2.60 – 17.30	2.80 – 18.40	0.20 – 1.10	SHALE.
	11.20 – 15.70	23.10 – 30.00	7.40 – 18.80	MUDSTONE and SILTSTONE.

Details are provided in the logs in Appendix B and the individual strata are described in the sections below.

5.2 Made Ground

Made Ground – Topsoil

Made ground topsoil was encountered across the site in 15 No. of the 45 No. exploratory hole locations. The made ground topsoil did not appear to have a pattern and generally comprised either clays with minor constituents of sands and gravels, or sandy gravel. Clays were encountered from ground level to between 0.30 – 0.70m bgl, though generally less than 0.40m in thickness. Sandy gravel was encountered from ground level to between 0.60 – 1.00m bgl. Made Ground Topsoil contained organic roots and anthropogenic inclusions of gravels of brick, ceramic, metal, and coal.

WS102 and WS103 contained sandy gravel with inclusions of gravel sized clinker, which was not encountered in the wider site area.

Sandstone flagstones and sub-angular to rounded brick cobbles were encountered within the made ground topsoil in TP111 between 0.10 – 0.20m bgl.

Made Ground – General

Made ground was encountered within 4 of the 45 exploratory hole locations, being observed from 0.30 – 1.00m bgl to depths between 0.70 – 2.10m bgl.

Composition of the made ground in WS102 and WS103, located within existing gardens, comprised of slightly gravelly sandy clay with gravels of brick, coal, mudstone and occasional clinker, encountered to depths between 1.20m and 1.30m bgl. The composition of the made ground in TP136 was similar, comprising of slightly gravelly slightly sandy clay with brick and coal, encountered to 0.70m bgl.

Deeper made ground was also encountered in TP107, adjacent to derelict farm buildings, up to 2.10m bgl (though the base of this strata was not proven). This was comprised of slightly sandy slightly gravelly clay with gravels of brick, shale, ceramic, coal, and plastic.

Sub-angular to sub-rounded brick cobbles were encountered at varying depths within the made ground.

5.3 Natural Topsoil

Topsoil was encountered across the majority of the site from ground level to between 0.30m and 0.70m bgl, generally comprising brown clays with minor constituents of sands and gravels. Topsoil was generally encountered to depths between 0.30m and 0.40m bgl.

For the purpose of this assessment, topsoil is defined as the upper darker and more fertile layer of the soil profile which is a product of natural chemical, physical, biological and environmental processes. This does not imply compliance with BS 3882:2015.

5.4 Natural Superficial Strata

The natural strata underlying the site was generally firm to stiff clay with varying amounts of sand and gravel as minor constituents. This was interpreted to represent Glacial Till deposits. Shear vane readings in the cohesive soils indicate the clays are generally firm to stiff (high strength).

Sands were encountered in eight locations across the site:

Location	Depth (m)	Strata
RO113	0.40 – 0.80	SAND.
TP109	0.40 – 1.60	Slightly clayey SAND.
TP127	0.50 – 0.90	Clayey SAND.
TP128	0.80 – 1.40	Clayey SAND.
WS106	0.60 – 1.90	Gravelly SAND.
WS107	0.70 – 1.60	Slightly gravelly slightly clayey SAND.
WS110	0.40 – 0.60	Slightly gravelly slightly clayey SAND.
WS111	0.80 – 1.90	Slightly clayey gravelly SAND.

5.5 Solid Geology

Destructured bedrock was typically encountered across the site within the shallow exploratory hole locations (trial pits, trial trenches and window sample boreholes), generally comprising sandstone, mudstone, and coal. The shallowest depth at which bedrock was encountered was 0.80m bgl and the strata is interpreted to dip gently to the south south-west. The greatest depth at which bedrock was encountered was 3.70m in RO101.

The deeper solid geology encountered in the rotary boreholes comprised a series of interbedded mudstones, siltstones, sandstones and coal seams of varying thicknesses.

The solid geology was interpreted to represent the Pennine Middle Coal Measures Formation.

Coal and broken ground encountered within the rotary holes is outlined below:

Location	Seam	Depth	Thickness	Intact / Non-intact
RO101	Discovery	12.70 – 14.60	1.90	Broken ground
RO102	Discovery	9.50 – 11.20	1.70	Intact coal
	Yard	15.20 – 17.20	2.00	Intact coal
	Earthy Delf	20.70 – 22.20	1.50	Intact coal

Location	Seam	Depth	Thickness	Intact / Non-intact
	Higher Florida	28.00 – 29.00	1.00	Intact coal
RO103	Discovery	18.40 – 20.30	1.90	Intact coal
	Yard	24.00 – 25.80	1.80	Intact coal
	Discovery	9.70 – 9.90	0.20	Intact coal
RO104	Yard	18.20 – 20.00	1.80	Intact coal
	Earthy Delf	23.20 – 26.20	3.00	Intact coal
	Discovery	19.20 – 20.40	1.20	Intact coal
RO105	Yard	24.90 – 26.20	1.30	Intact coal
	Yard	5.80 – 7.40	1.60	Soft drilling
RO107	Earthy Delf	6.50 – 6.70	0.20	Intact coal
	Earthy Delf	6.70 – 8.20	1.50	Broken ground
RO107A	Earthy Delf	3.90 – 5.20	1.30	Intact coal
	Higher Florida	12.30 – 13.40	1.10	Intact coal
	Lower Florida	23.10 – 24.50	1.40	Intact coal
	Cheshire Mine	38.40 – 39.10	0.70	Intact coal
RO109	Pastures	7.60 – 10.20	2.60	Intact coal
	Discovery	20.40 – 22.00	1.60	Intact coal
	Yard	27.20 – 28.30	1.10	Intact coal
RO110	Yard	8.20 – 10.50	2.30	Soft drilling
RO111	Yard	8.00 – 9.30	1.30	Intact coal
	Earthy Delf	16.50 – 17.80	1.30	Intact coal
RO112	Pastures	21.80 – 23.50	1.70	Intact coal
RO113	Discovery	17.10 – 18.80	1.70	Broken ground
	Yard	18.80 – 19.40	0.60	Soft drilling
RO114	Discovery	0.80 – 2.10	1.30	Intact coal
	Yard	9.30 – 11.00	1.70	Broken ground
RO115	Yard	13.30 – 14.80	1.50	Intact coal
	Earthy Delf	26.00 – 27.30	1.30	Broken ground

Full flush returns were typically recorded in the rotary boreholes, indicating intact coal, with the exception of 5 rotary locations where broken ground and 100% loss of flush was encountered, indicating the likely presence of mine workings at these locations. The majority of coal encountered was intact.

5.6 Groundwater

The depths to groundwater and locations present during site works are shown in the table below:

Location	Depth During Site Works (m)	Comments
WS103	1.20	-
WS109A	2.00	-
WS110	1.90	-
WS112	1.90	-
TP103	2.00	Small seepage
TP107	1.60	Small seepage
TP113	1.80	Medium seepage
TP121	3.90	Small seepage
TP125	0.70	Small seepage
TP133	2.00	Small seepage

NGW – No Groundwater Encountered

Post site works monitoring has revealed the following depths to groundwater:

Location	Depth During Monitoring Period (range) (m)	
	Min	Max
Overall min/max	1.20	9.56
WS101	1.22	2.36
RO103	7.00	9.56
WS103	1.83	2.71
WS105	NGW	NGW
WS106	NGW	NGW
WS108	NGW	NGW
WS109	1.47	2.20
RO114	6.64	8.56

5.7 Observations

Contamination

During the works undertaken by BSL, observations for both visual and olfactory evidence of contamination were undertaken.

With the exception of brick, ceramic, metal, and coal observed as a minor constituent in the made ground soils, no other evidence of contamination was observed at the site.

Running Sands

Localised pockets of running sands were observed in two trial pits during site works, as outlined below:

Location	Depth During Site Works (m)	Comments
TP120	1.60	Running sands
TP129	1.40	Running sands

Stability of Excavations/Boreholes

The sides of the trial pits were generally stable, with the exception to the running sands noted above. The stiff nature of the clay across the site proved difficult to excavate at depth.

The borehole sidewalls were generally stable, and window sampling progressed without the need to install casing.

The rotary boreholes were generally stable and achieved target depths. Collapses or encountering solid ground were the main drivers in terminations, as outlined in the table below:

Location	Depth (m bgl)	Reason for termination
RO101	16.60	Solid ground conditions.
RO106	10.40	BH collapse.
RO107	10.20	Solid ground conditions.
RO110	12.50	BH collapse.
RO113	24.00	Solid ground conditions.
RO114	15.00	Solid ground conditions.

6.0 TEST RESULTS

6.1 Geotechnical Laboratory Testing

Plasticity Index Analysis

Plasticity index results ranged between 8% and 26%. Associated water contents ranged between 14.9% and 26.1%.

After modification of particle size in accordance with NHBC Chapter 4.2 the modified plasticity indices are in the range 8% to 22% indicating the clays to be of low to medium volume change potential.

6.2 Aggressive Ground Conditions – Geotechnical Chemical Testing

The test results for the assessment of aggressive ground conditions are presented in Appendix D. The results are summarised and assessed within Section 7.0 of this report.

6.3 In Situ Geotechnical Testing

In Situ Hand Shear Vane Tests

Hand shear vane tests were carried out on suitable cohesive soils where possible. Each shear vane result recorded represents the mean value of three tests undertaken at the specified depth.

The results and distribution of the hand shear vane tests are recorded in kPa on the Exploratory Hole Logs which are presented in Appendix B.

In Situ Standard Penetration Tests

Standard Penetration Tests (SPTs) were carried out within the window sample boreholes at regular 1.0m intervals. The results of the individual blows and the N-values are recorded on the Exploratory Hole Logs in Appendix B.

All SPT N values are uncorrected. Density and strength descriptors are reported in accordance with the guidelines stated in BS 5930:2015+A1:2020, incorporating requirements of BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and BS EN ISO 14689-1:2003.

Soil Infiltration Test Results

Soil infiltration tests were undertaken within 2 No. trial pits, a summary of the results is presented in the table below. These were carried out in general accordance with BRE Digest 365 (BRE 2016) where infiltration rates allow three test runs during a working day (or where there is no infiltration), but where low infiltration rates were encountered the available time may not have been sufficient to fully comply with the BRE test method.

Where less than three tests were possible in a particular location the results provided should be considered as indicative only. Further discussion concerning the suitability of infiltration testing at the site is provided in Section 8.0.

Location	Stratum Type	Depth (m)	Infiltration Rate (m/sec)		
			Test 1	Test 2	Test 3
SA101	Clay to 2.40m then destructured sandstone to base	3.00	Unable to calculate rate due to no infiltration	-	-
SA102	Slightly sandy gravelly CLAY.	1.30	Unable to calculate rate due to no infiltration	-	-

The full test results are presented in Appendix D.

In Situ CBR Testing

The in situ CBR testing results are summarised in the table below:

Method	Location	Stratum Type	CBR (%)	Modulus Subgrade Reaction K^{762} (kN/m ² /mm)
Lightweight Deflectometer (LWD)	LWD101 – 0.20m	Sl sandy sl gravelly CLAY	0.2	6.06
	LWD102 – 0.30m	Sl sandy sl gravelly CLAY	0.3	6.67
	LWD103 – 0.30m	Sl sandy sl gravelly CLAY	0.6	10.99
	LWD104 – 0.20m	Sl sandy sl gravelly CLAY	0.2	5.54
	LWD105 – 0.20m	Sl sandy sl gravelly CLAY	0.3	7.49
	LWD106 – 0.30m	Sl sandy sl gravelly CLAY	0.4	8.21
	LWD107 – 0.30m	Sl sandy sl gravelly CLAY	0.2	6.37
	LWD108 – 0.20m	Sl sandy sl gravelly CLAY	0.3	7.49
	LWD110 – 0.30m	Sl sandy sl gravelly CLAY	0.2	5.95
	LWD111 – 0.30m	Sl sandy sl gravelly CLAY	0.2	5.34
	LWD112 – 0.30m	Sl sandy sl gravelly CLAY	0.2	6.06
	LWD113 – 0.30m	Sl sandy sl gravelly CLAY	0.2	5.24
	LWD114 – 0.30m	Sl sandy sl gravelly CLAY	0.2	6.37
	LWD115 – 0.30m	Sl sandy sl gravelly CLAY	0.2	5.54
	LWD116 – 0.20m	Sl sandy sl gravelly CLAY	0.2	5.24
	LWD118 – 0.30m	Sl sandy sl gravelly CLAY	0.2	5.13
	LWD119 – 0.30m	Sl sandy sl gravelly CLAY	0.2	5.24
	LWD120 – 0.30m	Sl sandy sl gravelly CLAY	0.2	5.34

The full test results are presented in Appendix D.

6.4 Geo-Environmental Testing

Chemical Laboratory Testing

The chemical test results for soils are presented in Appendix C. The results are summarised and assessed within Section 8.0 of this report.

Ground Gas Monitoring

Ground gas monitoring results are presented in Appendix E and are summarised and assessed within Section 8.0 of this report.

7.0 GEOTECHNICAL ASSESSMENT

7.1 Ground Model

The majority of the site is currently comprised of open fields with some existing buildings in the north-western area. There are two known mine shafts on site associated with the former coal mining activities. There is also very small pond located in the north-west area of the site.

The ground conditions can be summarised as below (top down):

-
- Made ground generally comprising sandy gravelly clay from ground level to between 0.70m and 2.10m bgl.
 - Natural superficial deposits comprising clays proven from 0.30m – 3.90m bgl and encountered to depths between 0.50m and 4.50m bgl. Localised granular sand deposits were also encountered in seven exploratory hole locations from 0.40m – 0.80m bgl and encountered to depths between 0.60m – 1.90m bgl.
 - Solid geology was found to comprise predominantly mudstone, with sandstone in RO103. Bedrock was encountered at shallow depths across the site, generally within the top 4.00m, to depths ranging between 2.00m – 40.00m bgl. Sandstone was proven from 0.80m – 3.30m bgl to depths ranging between 2.00m – 13.10m bgl.
 - Multiple coal seams were encountered beneath the site, between 0.20m and 3.00m in thickness.
 - Groundwater levels ranging between 0.70m and 3.90m bgl during site works.
 - Post site works monitoring levels ranging between 1.20m and 9.56m bgl.
-

Evidence of underground services onsite includes two water chambers/ above ground manholes present in the western area of the site and spray paint indicating the potential presence of underground services was seen to be running along the southern border of the site, parallel to the road.

Deeper made ground was also encountered in TP107, adjacent to derelict farm buildings, up to 2.10m bgl (though the base of this strata was not proven).

A low UXO risk zone spans across the entire site.

The site lies within a low groundwater flood risk area.

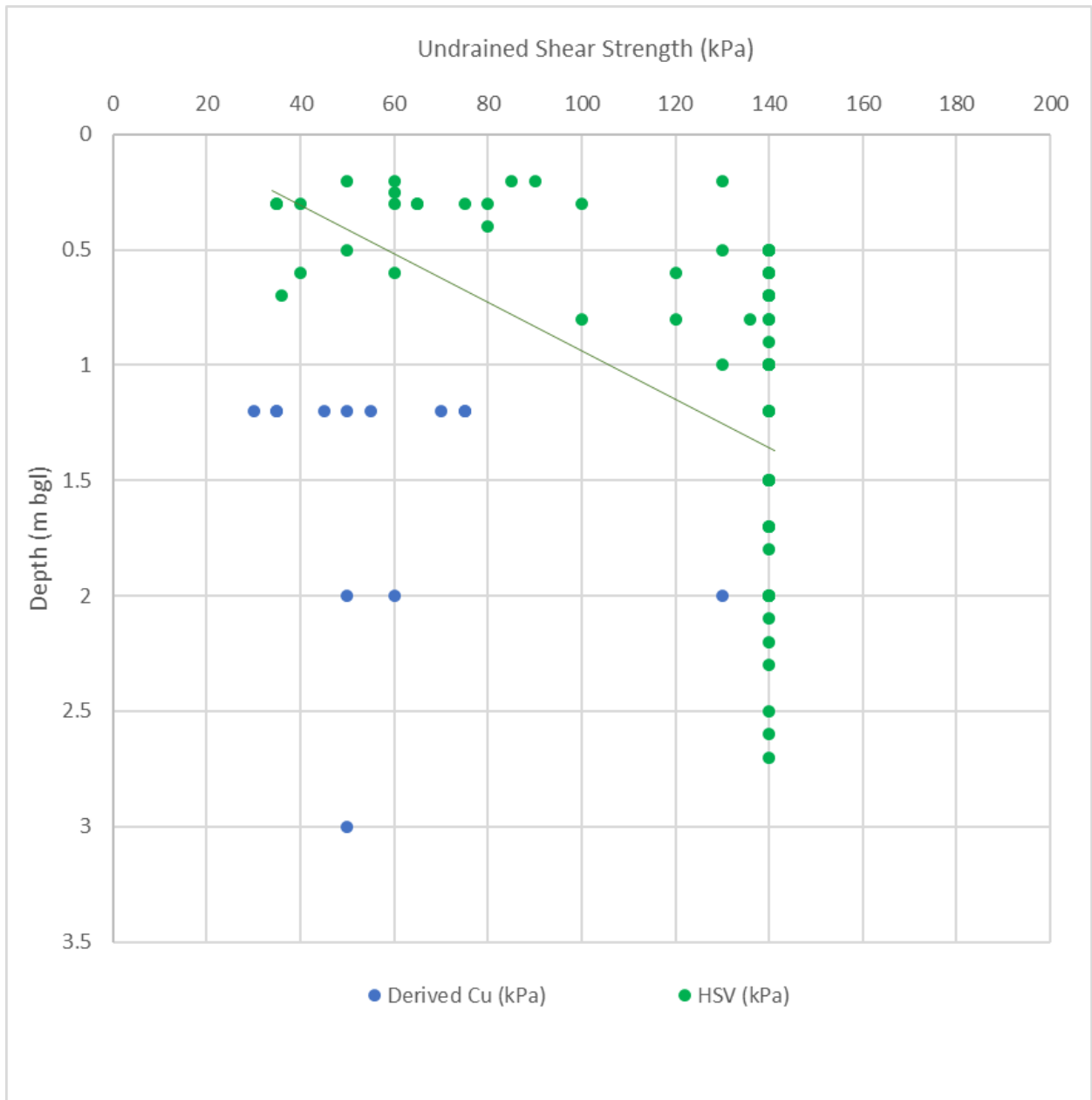
7.2 Design Soil Parameters

The relevant test results from the prior section have been evaluated to derive geotechnical soil parameters for the site.

For cohesive (fine) soils, the equivalent approximate undrained shear strengths (C_u) have been calculated from the recorded SPT N values, adopting f_1 values based on the correlation of Stroud (1975) and the 'average' plasticity.

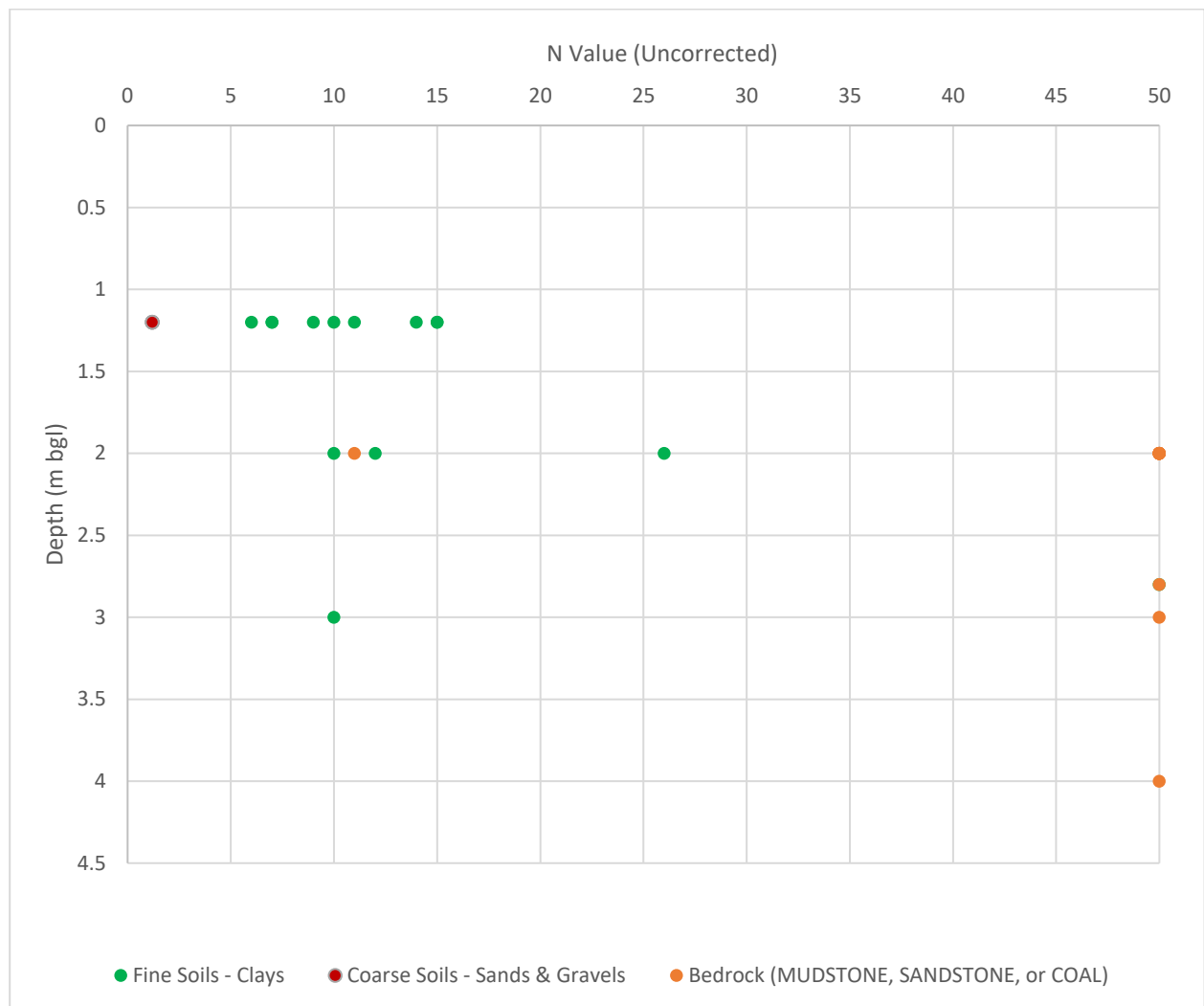
The angle of shearing resistance (ϕ') of the granular (coarse) soils has been derived from the uncorrected SPT N value data and the correlation of Hatanaka and Uchida (1996).

A depth (m bgl) vs derived shear strength (Cu) graph is provided below to provide a profile of the cohesive soils underlying the site:



The above graph shows a general increase in soils strengths as depth increases.

A depth (m bgl) vs SPT N value graph is also provided below to provide a profile of the granular materials underlying the site.



The above graph shows a general increase in soils strengths as depth increases.

Characteristic Values

Characterisation of the geotechnical parameters above has been undertaken to obtain characteristic values, which are a cautious estimate of the values affecting the occurrence of the limit state, taking into consideration typical minimum foundation depths for cohesive and granular soils.

Characteristic values for made ground are not presented due to the heterogeneity of the deposits and that they are not typically considered to be a suitable bearing stratum without some form of ground improvement.

The derived shear strength values taken from the window sample boreholes appear to show localised softer spots within the clay, however, the hand shear vane readings are considered to be more reliable and representative of the strength of the cohesive material because they provide a direct, undisturbed and immediate measurement of the soils shear strength properties. Therefore, the characteristic values are calculated predominately from hand shear vane data.

Based on the low to medium volume change of the cohesive soils, foundations should be placed at a minimum depth of 0.90m bgl, therefore characteristic values are presented for this approximate depth.

The characteristic value for undrained shear strength (C_u) as read from the depth vs C_u graph above in cohesive deposits at 0.90m bgl is interpreted to be 100kN/m^2 , increasing to 150kN/m^2 from 1.50m bgl.

Note that made ground was encountered deeper than 0.90m bgl in just three locations, WS102 (1.30m bgl), WS103 (1.20m bgl) and in TP107 (2.20m bgl +) and this will be unsuitable to found in.

The characteristic ϕ' value in the granular deposits has been extrapolated from the SPT 'N' value data and visual descriptions of the ground conditions and at a depth of 0.80m bgl is interpreted to be 30° for Ultimate Limit State conditions.

A characteristic ϕ' value of 40° for the bedrock across the site has been extrapolated from the SPT 'N' value data and visual descriptions of the ground conditions within the Pennine Lower Coal Measures bedrock. However, note the depth to this stratum is variable across the site.

7.3 Foundations

The development will comprise traditional 2 and 2.5 storey residential housing and is considered to be classed as Geotechnical Category 2 in accordance with Eurocode 7.

Preliminary design by calculation has been undertaken to determine the design resistance of the bearing strata in the following section. Note that the made ground noted in section 7.2 above is not considered to be a suitable bearing stratum.

No proposed structural loads were available at the time of writing; therefore, the following recommendations are provisional and should be reviewed at the detailed design stage. For the purpose of this assessment a typical load of 50kN has been assumed per storey.

This assessment is based on the existing ground levels and does not take into consideration any cut/fill exercise, which should be considered at the detailed design stage

The below also assumes that any historical mine workings below the site will be stabilised via a drill and grout scheme.

Shallow Foundations – Strip

The most suitable foundations for the proposed residential homes across the majority of the site are considered to be strip foundations.

Based on the medium volume change potential, foundations should be placed at a minimum depth of 0.90m bgl into the natural cohesive deposits and deepened near trees and hedges in accordance with NHBC Chapter 4.2.

Whilst the minimum founding depth of 0.90m bgl will be suitable for the vast majority of the site, foundations will need to be deepened locally to found in more competent strata due to localised made ground deposits encountered in WS102, WS103 and TP107. Where footings are placed below the minimum founding depths, they should extend a minimum of 100mm into the specified bearing stratum.

At 0.90m bgl, an allowable bearing capacity not exceeding 230 kN/m^2 may be assumed. This increases to 300kN/m^2 from 1.50m bgl. This adopts a factor of safety of 3 which should limit settlements to within acceptable limits.

Trees are noted within and close to the areas proposed for development. Depending on their size, type and maturity, the required depth of founding based on the recommendations of NHBC Chapter 4.2 may exceed 2.5m. Should this prove to be the case, then piled foundations should be considered as a potentially more economical solution, unless it can be proven that the soils are not desiccated.

Note where foundations require deepening to greater than 2.5m below ground level, they must be designed by an engineer, as specified in NHBC Technical Requirement R5. Consideration of grouted horizons is also required.

Localised granular sand strata were encountered in eight locations across the site as detailed in section 5.4. In these locations, the sand was found to be directly underlain by solid bedrock. Therefore, foundations in these locations should be placed upon the granular sand strata, where unacceptable differential settlement would not be anticipated. At 0.80m bgl, an allowable bearing capacity not exceeding 150 kN/m² may be assumed. This adopts a factor of safety of 3 which should limit settlements to within acceptable limits.

General Advice for Shallow Foundations

The bearing stratum should be inspected for 'soft spots' within the natural clay strata, resulting for instance from localised groundwater perched within the overlying fill materials. If unsuitable soft soils are encountered, then foundations will need to be deepened to found on suitable strata or soft or loose zones should be excavated and replaced with well compacted suitable granular fill or lean mix concrete. The stratum should also be inspected for 'hard spots' which may require removal.

If the ground conditions encountered during the construction phase differ significantly to the conditions encountered during construction, work should cease and BSL contacted for further advice.

During the construction phase supervision should be on a continuous basis to check the design assumptions are correct and construction conforms to design. Supervision should include inspections, Control Ground Investigations and monitoring.

7.4 Building Near Trees

The clay soils on site are of medium volume change potential. Where foundation excavations (or piles if adopted) encounter cohesive strata in the vicinity of existing, proposed or recently removed trees, foundations should be adjusted in full accordance with NHBC Standards Chapter 4.2. All foundations should be deepened below roots of greater than 5mm diameter during excavations for footings.

A survey of all trees and hedges on the site and within influencing distance of the site boundary should be undertaken to identify tree species and heights by a qualified arboriculturist in accordance with BS 5837:2012 and NHBC Standards. This information will be required in order to assess the effects of trees on the cohesive strata.

Where foundation depths due to trees already present or recently removed exceeds 1.50m, there is a possibility for heave to occur on removal of the tree and guidance states that compressible material or void former is required against the inside face of the foundation, unless it can be satisfied that the soil is not desiccated.

7.5 Floor Slabs

Given the thickness of topsoil and localised made ground present, suspended floor slabs should be adopted at the site in accordance with NHBC standards.

Where foundation depths due to trees already present in cohesive (shrinkable) strata exceeds 1.50m, there is a possibility for heave to occur on removal of the tree, unless it can be satisfied the soils are not desiccated. In this instance, NHBC Guidance states that either a precast concrete floor (i.e. beam and block), a suspended timber or a cast in-situ concrete floor must be used. We recommend the former, where the required void size for beneath floor slabs on this site is 250mm based on the medium volume change potential clays.

Ground bearing slabs may also be adopted providing the following criteria are satisfied:

- Any other compressible or unsuitable materials (topsoil containing vegetation and organic matter, including tree roots, are excavated and either improved or removed and replaced with suitable materials.
- The foundation depth (such as due to the influence of trees) is less than 1.5m.
- It is demonstrated that desiccation in cohesive soils is not present.
- Any fill beneath the slab is suitable, well-compacted granular material placed in an appropriate thickness in accordance with a suitable specification (e.g. NHBC Standards) designed and supervised by an appropriately qualified engineer, with the end performance validated.
- The slab is adequately reinforced.
- Regular construction joints and ties are provided to allow for differential settlement.

The final floor slab design should be of sufficient thickness and sufficiently reinforced to accept the envisaged applied loads, without unacceptable total or differential movement.

Vertical elements within the structure, such as columns and walls will need to be isolated from the ground bearing slab in order to allow for the slab to expand against them without resulting in cracking.

Prior to the placement of the founding materials and the construction of a ground bearing floor slab, the sub-formation and formation will need to be inspected and checked by a geotechnical engineer to ensure the ground conditions are as expected. If soft spots or hard spots are identified at the formation level, they should be reported to the Geotechnical Engineer immediately and remedial actions agreed.

Incorporation of geogrid reinforcement at formation level, before granular material is placed and compacted, will likely minimise required excavation depths and help provide a suitable foundation for the ground bearing slab.

7.6 Site Preparation and Construction

The existing structures will need to be demolished, and relict foundations / infrastructure grubbed out. Topsoil and subsoil should be removed from beneath all proposed buildings and hardstanding areas.

There are a number of services crossing the site, including two water chambers / above ground manholes in the west, and spray markers indicating a service to the south of the site parallel to the road. There is also a marked United Utilities service in the south-eastern site area. To allow remediation and construction, all services will need to be disconnected, and any suspected dead services are confirmed as dead by testing.

Instability of excavations through natural soils is not anticipated provided they are not exposed to adverse weather conditions for any substantial period of time. Instability of the made ground should be allowed for. All excavations should be carried out in accordance with CIRIA Report 97 'Trenching Practice'.

Excavation depths should generally be readily achieved using conventional plant (JCB or similar) although high specification plant (tracked 360° or similar) is recommended to maintain the build programme.

Calorific values were determined for two soil samples of backfill material from the two historic onsite mine shafts. The results were 9.92MJ/kg (MS03) and 8.53MJ/kg (MS06), with the presence of coal noted in both locations. Reference to the ICRL guidance notes on the fire hazards of contaminated land (Ref. 20) indicates the two samples have results greater than 7MJ/kg, identified as an unacceptable risk of smouldering (Ref. 20), but they are not greater than 10MJ/kg, which is considered almost certainly

combustible. Further assessment should be undertaken at detailed design stage, when it has been established how colliery material present on site will be re-used. Although combustion and propagation of flames within coal seams and workings is possible it is highly unlikely due to the low oxygen concentrations likely to be present within underground coal seams and abandoned mine workings, and slow smouldering is a more realistic, although still unlikely, possibility. Given that the majority of the site, including the areas of encountered mine shafts, is overlain by a minimum of 2.00m of superficial deposits, this may be considered to act as a non-combustible, inert cap. In addition, the high groundwater table on site is likely to reduce the risks to acceptable levels.

The likelihood of the material to propagate flame is further dependent on its porosity, moisture content and temperature. Whilst the material is deemed suitable for use as the calorific values lie below the 'unacceptable risk' threshold, it is recommended that a minimum density / level of compaction is established for the material and any material identified below this limit should be improved in areas of residential development or a suitable capping layer is placed. It is likely that improvement for geotechnical purposes within the footprint of structures will be adequate to achieve the required density, however if ground improvement is achieved using vibro-stone columns, these may allow air into the colliery spoil and this may preclude their use, this should be discussed with a specialist sub-contractor.

It should be noted that undertaking treatment locally or using deepened foundations (i.e. focussing only on the footprint of structures) means that the surrounding areas (roads, gardens and landscaping) are likely to settle relative to the structures if disturbed. This risk can be mitigated by undertaking more widespread ground improvement through techniques such as dynamic compaction, surcharging or excavation and re-compaction.

To protect against the effects of heave, new drainage in costive soils should be designed to take account of potential ground movement, including where pipes and services which pass through substructure walls or foundations. The volume change potential on this site is medium and the potential ground movements that need to be considered for design are 100mm.

Recorded post site works groundwater levels ranged between 1.20m and 9.56m bgl and therefore are likely to be encountered within likely excavation depths. Based on the exploratory holes logs and monitoring, it is considered that methods such as sump pumping are likely to be sufficient to deal with anticipated flows. Further guidance is provided in CIRIA C750 "Groundwater Control: Design and Practice". It should be noted that groundwater levels will vary seasonally, and the timing of construction may influence requirements.

7.7 Mine Workings and Entries

Based on the Coal Mining Risk Assessment undertaken by BSL in March 2025 (ref KB/C5980/13837), a risk to the proposed development was identified from unrecorded mine workings and recorded and unrecorded mine entries. This report concluded that based on the indicated dip directions and outcrop patterns from the available geological mapping, the underlying strata are indicated to dip 11-12 degrees south south-west.

Mine Workings

Evidence of coal mine workings can be represented by voids, broken ground and/or loss of flush with evidence of potential workings indicated by intact coal of a suitable workable thickness and quality. An assessment should be made based on all the available evidence.

During site investigations, coal was encountered in 11 of the 16 rotary boreholes, encountered from 0.80m – 38.40m bgl to depths ranging between 1.90m – 39.10m bgl. The thicknesses of the seams ranged from 0.20m to 3.00m thick.

Broken ground was encountered in 5 of the 16 rotary boreholes, suggesting that the coal has been previously worked. This was encountered from 6.70m – 26.00m bgl, to depths ranging between 8.20m – 17.30m bgl. The thicknesses of the broken ground ranged from 1.30m to 8.70m thick. This is detailed in the table below:

Location	Depth	Thickness	Depth to Bedrock
RO101	12.70 – 14.60	1.90	3.70
RO106	5.80 – 7.40	1.60	2.90
RO107	6.70 – 8.20	1.50	2.60
RO110	8.20 – 10.50	2.30	2.90
RO113	17.10 – 18.80	1.70	0.80
	18.80 – 19.40	0.60	
RO114	9.30 – 11.00	1.70	2.10
RO115	26.00 – 27.30	1.30	2.60

Given the presence of coal workings beneath the site, further assessment is required and is discussed further in Section 7.8.

Mine Entries

The Coal Mining Risk Assessment stated that two recorded mine entries are present onsite, one in the west and one in the south-east area of the site. The two recorded mine shafts have reference numbers 347390-003 (MS003) and 347390-006 (MS006) respectively. One further mine shaft, reference 347390-004, is indicated to be present offsite but within 20m of the eastern boundary. Trial trenches were excavated to determine the precise location of the on-site mine shafts, allowing dimensions and backfill material to be recorded and tested.

A circular depression was visible from ground level in the vicinity of MS003 in the eastern site area, but MS006 had no evidence at ground level of any subsidence.

MS003 was identified in the location indicated by the surface depression and at the location of the MRA coordinates. It was encountered at the top of the bedrock at 2.00m bgl, within the destructured mudstone and coal.

MS003 was observed to be backfilled with 'Grey and orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal and mudstone'. The material was interpreted to be natural site won arisings associated with the historical mining activity. The mine shaft was exposed to a maximum depth of 5.50m bgl with the excavator.

MS006 was identified in the soft landscaping 6m to the east of the MRA coordinates. It was encountered at the top of the bedrock at 2.20m bgl, within the destructured mudstone.

MS006 was observed to be backfilled with 'MADE GROUND: Grey and black gravelly clay. Gravel is angular to sub-rounded fine to coarse of brick, coal, mudstone, sandstone, and chert'. The material was interpreted to be site won arisings associated with the historical mining activity. The feature was exposed to a maximum depth of 2.50m bgl.

Mine shaft MS003 was located at grid reference 347271, 390169 and measured approximately 2.00m in diameter. Mine shaft MS006 was located at grid reference 347001, 390243 and measured 1.53m in diameter. Based on the narrow diameter, both shafts are interpreted to have been utilised for ventilation purposes. Images taken during the investigation are shown on the Mine Shaft Investigation Photo Board drawings (ref. C5980/MS003, and C5980/MS006), and the trial trench logs are presented in Appendix B. Neither mine shaft was observed to contain any capping, grouting or plugging.

The presence or absence of mine shaft MS004, which lies offsite from the south-eastern boundary, was investigated by means of TP131, which extended to the boundary of the site. No evidence of an historic mine shaft were noted within this area, indicating that the mine shaft is unlikely to be present within the site boundary. Furthermore, the positions of the two recorded mine shafts onsite were very accurate in relation to the MRA provided coordinates.

Guidance on the potential zone of influence from a theoretical collapse of a mine shaft can be found in CIRIA C758 'Abandoned Mine Workings Manual' and it is recommended that all shafts within influencing distance of proposed structures are stabilised prior to development. It is envisaged that this can be undertaken in conjunction with bulk infilling of mine workings.

Where mine shafts lie offsite there may be significant practical difficulties associated with gaining access to undertake stabilisation works. It must be cautioned that recorded shaft locations can vary significantly from the true positions and there is a high risk of unrecorded mine shafts being present.

It is recommended that the proposed layout is developed with consideration of the location and stability of the known mine shafts. At present, MS003 is indicated to be located in a proposed highway, whilst MS006 is indicated to be located in an area of Public Open Space (POS).

Where mine shafts are present it will be necessary to install a cap to a structural specification. The design will require agreement with building control, the Mining Remediation Authority and the NHBC. It is recommended that the positioning of structures over shafts is avoided, including within a specified standoff zone.

Possible Unidentified Mining Features

Given the extent of the exploratory hole coverage, and the significant mining related history onsite, there is a possibility that some mining features (unrecorded mine shafts) may exist beneath the site that have not been identified in the ground investigation. Therefore, it is imperative that a detailed watching brief is carried out for all excavations and earthworks that occur onsite. The recorded mine shafts were easily identified during the trial trenching, with the infilled material being highly varied from the surrounding superficial and bedrock material, with clear dividing lines between the feature and the surrounding undisturbed ground. Further drilling investigation works may be required if unidentified anomalies are identified in the foundation excavations.

7.8 Treatment of Mine workings

Mine Entries

Guidance on the potential zone of influence from a theoretical collapse of a mine shaft can be found in CIRIA C758 'Abandoned Mine Workings Manual' and it is recommended that all shafts within influencing distance of proposed structures are stabilised prior to development. Rockhead is located at circa 2.00m bgl at Mine shaft 003, and at circa 2.20m bgl at Mine shaft 006. The theoretical zone of instability surrounding each mine shaft would be a radius of 2.00m from the edge of Mine shaft 004, and 2.20m at Mine shaft 006.

Due to the nature of the fill, which has already exhibited potential to settle due to subsidence at the surface prior to site works, it is recommended that the shafts will need to be suitably remediated prior to the proposed development commencing on this site. Remediation is suggested to be either the installation of a suitable reinforced concrete cap over the shaft, or alternatively the grouting of the shaft to stabilise the existing backfill material and surrounding area. Prior to remediation, the design will require agreement with building control, the Mining Remediation Authority and the NHBC. The Mining Remediation Authority will also need to undertake an Options Appraisal for the proposed treatment. Whilst infilled material was encountered within the mine shafts at near-surface, there exists the possibility that the shaft is capped at

a certain distance below ground level, beyond which the remainder of the shaft is voided. However, the specific investigation into this was beyond the scope of this report.

In areas of soft landscaping, highways and car parking, a suitable geogrid should also be installed within the zone of influence of mine features, in addition to the plugging / capping, to prevent against any unacceptable levels of subsidence.

The below table details the estimated diameter of the identified mine shaft features, based on the empirical evidence noted during the site works, and the depths to competent strata in these locations.

Mine shaft	Diameter (m)	Depth to competent Strata (m bgl)	Diameter of Plug (based on 45° angle)
347390-003	2.00	2.00	6.00
347390-006	1.53	2.20	5.93

It is recommended that the proposed layout is developed in conjunction with consideration of the location and stability of the known mine shafts. It is recommended that where possible the positioning of structures over shafts is avoided.

Mine Workings

Guidance within CIRIA C758 'Abandoned Mine Workings Manual' indicates that a void will not migrate to the surface where there is more than ten times the seam thickness of rock cover (10t criterion, Piggott and Eynon 1978). Up to this depth, the void will begin to choke with rock from the roof, which is represented by broken ground.

Beyond 10 times the seam thickness, the upwards migration of the void would be expected to 'choke out', due to bulking of the collapsed materials (i.e. there will be acceptable cover over the workings to prevent void migration to the surface).

The results during site works are outlined below:

Location	Ground type	Ground depth (m bgl)	Broken ground thickness (m bgl)	Depth to competent bedrock	Thickness of competent cover required	10T Achieved?
RO101	Broken ground	12.70 – 14.60	1.90	3.70	19.0	No
RO106	Soft drilling	5.80 – 7.40	1.60	2.90	16.0	No
RO107	Broken ground	6.70 – 8.20	1.50	2.60	15.0	No
RO110	Soft drilling	8.20 – 10.50	2.30	2.90	23.0	No
RO113	Broken ground	17.10 – 18.80	1.70	0.80	17.0	No
	Soft drilling	18.80 – 19.40	0.60			No
RO114	Broken ground	9.30 – 11.00	1.70	2.10	17.0	No
RO115	Broken ground	26.00 – 27.30	1.30	2.60	13.0	Yes

The shallowest coal seam was encountered at 0.80m bgl, and thicknesses ranged from 0.20m – 3.00m. The shallowest seam is interpreted to be the Discovery seam, though it should be noted that five seams in total sub-crop beneath the site. Broken ground was encountered in 5 rotary locations, encountered from depths between 6.70 – 26.00m bgl up to 8.20 – 27.30m bgl. These are interpreted to represent historical workings within the following seams of coal: Discovery, Yard and Earthy Delf. No evidence of workings was identified in the Pastures seam, Higher Florida or Lower Florida.

Based on CIRIA guidance there is insufficient solid rock cover for both seams to prevent upward migration of collapses affecting the future development and mitigation measures are required in the form of drilling and grouting

A drill and grout specification will be required to enable a contractor to carry out the works. It is recommended that the works are reviewed by BSL as they progress and as the ground conditions require. It should be noted that the scope of the investigation undertaken to date may not have identified all potential workings within the site boundary and additional investigation may be required to verify the design of the mine stabilisation scheme. As stated above, this could be undertaken prior to or concurrently with the drilling and grouting operation.

It would also be prudent to extend a selected number of boreholes undertaken as part of the grouting works to greater depth to verify the absence of deeper workings in the underlying strata. Alternatively, drill holes could be terminated upon the satisfaction of the supervising engineer that an appropriate thickness of solid drilling has been proven to discount the risk of instability due to workings in deeper seams.

It will be necessary to continue treatment to a satisfactory distance outside of the footprint of proposed dwellings to ensure stability in the occurrence of collapse of adjacent ground that has not been subject to treatment. This may extend up to 3m beyond the proposed footprint, subject to confirmation from the Mining Remediation Authority. Consideration should also be given to the stabilisation of site access roads.

A licence will be required from the Mining Remediation Authority to undertake the drilling and grouting works, this typically takes 3-4 weeks to obtain. The Mining Remediation Authority may have requirements in respect of control of emissions of gas and mine water as a condition of issue of a licence. The Mining Remediation Authority terms and conditions may pose restrictions on the choice of drilling flushing medium in response to recent public safety issues.

Upon completion of drilling and grouting a validation report will be required for presentation to the regulators detailing hole locations, seams targeted, grout takes etc.

It should be noted that as large areas of the site lie within a High-Risk Development Area, the Mining Remediation Authority is likely to be a statutory consultee as part of the planning process or may be consulted by the Local Authority. The findings of this assessment should be confirmed with the Local Authority, and Mining Remediation Authority if necessary, prior to any irrevocable action at the site

7.9 Concrete Classification

The soluble sulphate and pH test results have been assessed in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005. The Design Sulphate (DS) classification and the Aggressive Chemical Environment for Concrete (ACEC) classification are presented in the table below.

For the purposes of this assessment, the groundwater has been classified as static given the site is underlain by low permeability deposits.

Stratum	No. Samples	Characteristic SO ₄ (g/l)	Characteristic pH	DS Class	ACEC Class
Made Ground	6	77	6.1	DS-1	AC-1s
Natural Superficial Strata	13	500	6.3	DS-2	AC-1s
Solid Geology – Sandstone	1	2.7	2.3	DS-1	AC-1s

Based on the above, the results of laboratory pH and sulphate content, alongside the BRE full suite tests, indicate that the made ground and solid geology (sandstone) sulphate class is DS-1 and ACEC Class AC-1s conditions prevail in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005.

The natural superficial strata class is DS-2 and ACEC Class AC-1s.

The specific concrete mixes (the Design Concrete Class) to be used on site will be determined by the site-specific concrete requirements in terms of the durability and structural performance. These are assessed in terms of the Structural Performance Level (SPL) and any need for Additional Protective Measures (APM) detailed in Part D of BRE Special Digest 1 with further guidance in Pt E and F.

7.10 Highways

Based on the test results, equilibrium CBR values of 2% or more are not likely to be achieved in natural clays soils for pavement design purposes, unless proven otherwise by in-situ testing at formation level by a specialist geotechnical engineer. Equilibrium CBR values are likely to be 2% within the made ground.

Where the CBR is found to be less than 2%, the sub-grade is unlikely to be suitable for both the trafficking of site plant and as a permanent highway foundation without improvement of the soils.

To achieve the required design CBR value, improvement works should be carried out in accordance with DMRB IAN 73/06 Rev 1 Chapter 5 and may include proof rolling, excavation and re-engineering / replacement of weaker soils, the inclusion of a geogrid or use of stabilisation techniques such as the addition of hydraulic binders (e.g. cement/lime).

Based on the fines content of the soils, they are considered to be frost susceptible, therefore highway construction should be a minimum thickness of 450mm to mitigate against the risk.

Care should be taken to ensure the stratum at formation level is protected against inclement weather, as this is likely to lead to surface deterioration and a decrease in soils strengths.

7.11 Site Drainage

The use of sustainable drainage systems, such as traditional soakaways within the natural ground, is not likely to be feasible due to the presence of low permeability cohesive strata underlying the site, and the lack of calculatable drainage rates obtained from the soakaway testing.

8.0 GEO-ENVIRONMENTAL RISK ASSESSMENT

8.1 Introduction

The samples were tested for an assessment of the chemical contamination that may pose a risk to human health. The results were examined with reference to a selection of guidance documents as detailed in Appendix A. In this case the LQM/CIEH S4ULs and DEFRA C4SLs for a residential end use with homegrown produce have been adopted as Tier 1 generic screening values.

The apparent exceedance of the relevant screening value is taken as indicating further detailed assessment or remedial action is required.

A summary assessment sheet is presented in Appendix C alongside the chemical test results. Results are discussed in detail in the sections below.

8.2 Soils Test Results and Risk Assessment – Human Health

Metals

The following elevated metals were detected:

Exploratory Hole	Depth (m)	Stratum	Metal	Concentration (mg/kg)	Adopted Screening Value (mg/kg)
WS103	0.10 – 0.60	Made Ground	Arsenic	38	37
			Lead	980	200

Asbestos

No asbestos fibres have been detected in any of the 5 samples screened.

No visual evidence of asbestos contamination was noted during the investigation, which was undertaken by an engineer with asbestos awareness and>NNLW qualifications.

Poly Aromatic Hydrocarbons (PAHs)

No PAHs have been detected above the adopted screening criteria.

Total Petroleum Hydrocarbons (TPH CWG)

No petroleum hydrocarbons have been identified above the adopted screening criteria.

BTEX and MTBE

No BTEX or MTBE compounds have been identified above the adopted screening criteria.

Volatile Organic Compounds (VOCs)

No VOCs have been identified above the adopted screening criteria.

8.3 Summary – Human Health Risk Assessment

Based on the testing and assessment undertaken there is localised contamination within the made ground in the form of metals (Arsenic and Lead), with exceedances found in WS103 between 0.10 – 0.60m bgl. Arsenic concentrations exceeded the adopted screening value by 1mg/kg, whereas Lead concentrations were greatly elevated at 980mg/kg (compared to the adopted screening value of 200mg/kg).

The above pose a risk to human health and will require further consideration prior to redevelopment.

8.4 Soil Test Results – Controlled Waters

Soils

Based on the testing and assessment undertaken, there is localised contamination within the made ground in the form of heavy metals (Arsenic and Lead), with exceedances found in WS103 between 0.10 – 0.60m bgl. No further elevated concentrations of contaminants were identified in soils as an indicator of potential impact on groundwater.

8.5 Controlled Waters Risk Assessment

Groundwater/surface water testing has not been carried out based on the preliminary CSM risk assessment and the site is not considered to pose a significant risk to controlled water for the following reasons:

- No significant gross or mobile contamination has been identified on site in soils based on the results obtained as a potential indicator of groundwater contamination.
- There is no indication under present conditions of significant pollution of controlled waters and conditions following development of the site will not be any worse, indeed they may improve with increased hard cover and water retaining imported soft landscaping soils.
- For the made ground, the preparation of samples for leachability analysis has not been undertaken as this is an aggressive methodology and provides theoretical values which are unlikely to be representative of existing site conditions, real site leaching concentrations will be reduced significantly from that indicated by the laboratory testing, furthermore this would not be representative of post construction conditions, which will significantly reduce infiltration.
- The site is underlain by low permeability clays which will inhibit lateral and vertical contaminant migration.
- The site does not lie within 1000m of an SPZ.
- There are no groundwater abstractions within 1000m.

8.6 Permanent Ground Gas and Vapours Results

A total of 6 No. ground gas monitoring visits have been carried out to date. Results are summarised in the table below:

	CH ₄ (%)		CO ₂ (%)		O ₂ (%)		CO (ppm)		H ₂ S (ppm)		Steady Flow (l/hr)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Peak	0.1	0.7	0.1	8.6	0.3	21.3	0.0	0.0	0.0	0.0	0.0	3.3
Steady	0.1	0.2	0.1	4.8	7.4	21.6	0.0	0.0	0.0	0.0	0.0	0.2

Notes: CH₄ = Methane; CO₂ = Carbon dioxide; O₂ = Oxygen; CO = Carbon Monoxide; H₂S = Hydrogen Sulphide; TVOC (PID) = Total Volatile Organic Compounds (as measured with Photo Ionisation Detector); ppm = Parts Per Million.

The highest methane levels were recorded in RO103 on the first monitoring visit (0.7% v/v).

The highest carbon dioxide levels were recorded in WS109 on the penultimate visit (8.6% v/v).

A maximum flow of 3.3 l/hr was recorded in RO103 on the third visit, though the next highest flow was 0.2 l/hr, with the remainder all being below the limit of detection (0.1 l/hr)

The atmospheric pressure ranged between 1000mb and 1025mb over the monitoring period. The first three visits were conducted over rising pressure trends, and the final three visits were conducted over falling pressure trends.

No groundwater levels were recorded above the response zones, but they were recorded within the response zones in WS101, RO103, and WS103 in all 6 monitoring visits. It was also encountered within the response zone of WS109 and RO114 on 4 visits.

8.7 Ground Gas Risk Assessment

Basis of Assessment

In order to assess the ground gas situation and the requirement for ground gas precautionary measures at the site, guidance was taken from BS8485:2015+A1:2019 'Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings' and CL:AIRE Technical Bulletin TB17 'Ground Gas Monitoring and 'Worst-Case' Conditions'. For sites influenced by mine workings, the CL:AIRE guidance 'Good Practice for Risk Assessment for Coal Mine Gas Emissions' has been utilised.

Rationale and Suitability of Dataset

As per the Phase 1 Desk Study, in accordance with BS8485 and as set out in Appendix A of this report, the ground gas generation potential is considered to be **very low** (sources as made ground and underground historic mine workings). The sensitivity of the development is **high** on account of the proposed residential end use.

In line with current guidance, it is recommended gas monitoring should comprise 6 visits over a 3-month period. Gas monitoring is now complete.

Assessment of Data

Derivation of a Gas Screening Values (GSV) has been undertaken based on the guidance with BS8485 using the following equation: (max gas concentration / 100) x maximum steady flow.

The peak flow recorded in RO103 (3.3 l/h) during the third visit do not appear to be typical of the site or location, and they quickly fell back to below detection limits of the instrument used (i.e. 0.1 l/hr). These flows appear to be driven by rises in groundwater levels (causing a piston effect). Rises in groundwater levels was observed in RO103 from the first visit, with groundwater levels at 7.00m during the first visit to 9.56m by the final visit, therefore a maximum steady flow of 0.20l/hr has been used to derive the worst credible GSVs.

The GSV's for the site are presented below:

Ground Gas	Adopted Typical Steady Flow Rate (l/hr)	Max Concentration (% v/v)	Worst Credible GSV (l/h)	Classification based on GSV	Typical Threshold Concentration Exceeded
Methane	0.2	0.7	0.0014	CS1	No – CS1
Carbon Dioxide	0.2	8.6	0.0172	CS1	Yes – CS2

The GSVs place the site the site into Characteristic Situation 1 (CS1), however due to concentrations of carbon dioxide greater than 5% v/v being recorded at the site then guidance states **consideration** should be given to increasing the site classification as part of assessment.

Glacial Till is not generally considered to be a source of ground gases due to the very low concentrations of organic material typically present within such soils. it is likely the excess concentrations of gas are attributable to microbial respiration as opposed to any other obvious generation source.

In order to further increase confidence in this assessment and adopting a lines of evidence approach, reference has been made to the 2018 paper by Wilson et al (Ambience and EPG Ltd) "Using ternary plots for interpretation of ground gas monitoring results" and NHBC NF94 "Hazardous Ground Gas".

The paper states that carbon dioxide is widespread in the sub surface environment and is generated by microbial and geochemical processes. If there is any organic, carbonate or pyrite content in the soils or rocks then carbon dioxide could potentially be present at concentrations up to 21% v/v. Soils in the UK where carbon dioxide is present commonly include glacial Till and made ground.

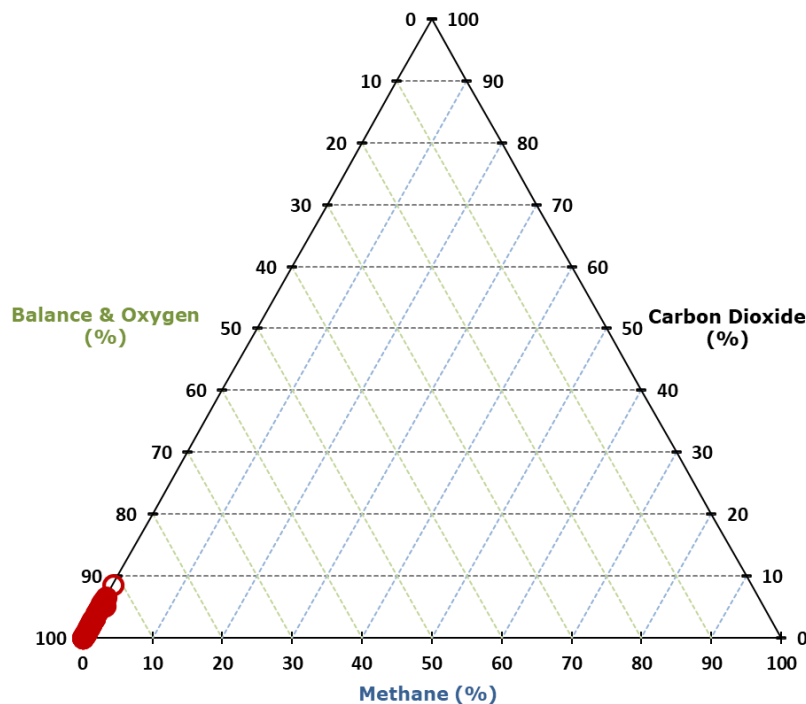
When monitoring wells are installed in these materials, the small volumes of organic material are exposed to oxygen. This can result in biological respiration or oxidation of the material resulting in the production of carbon dioxide.

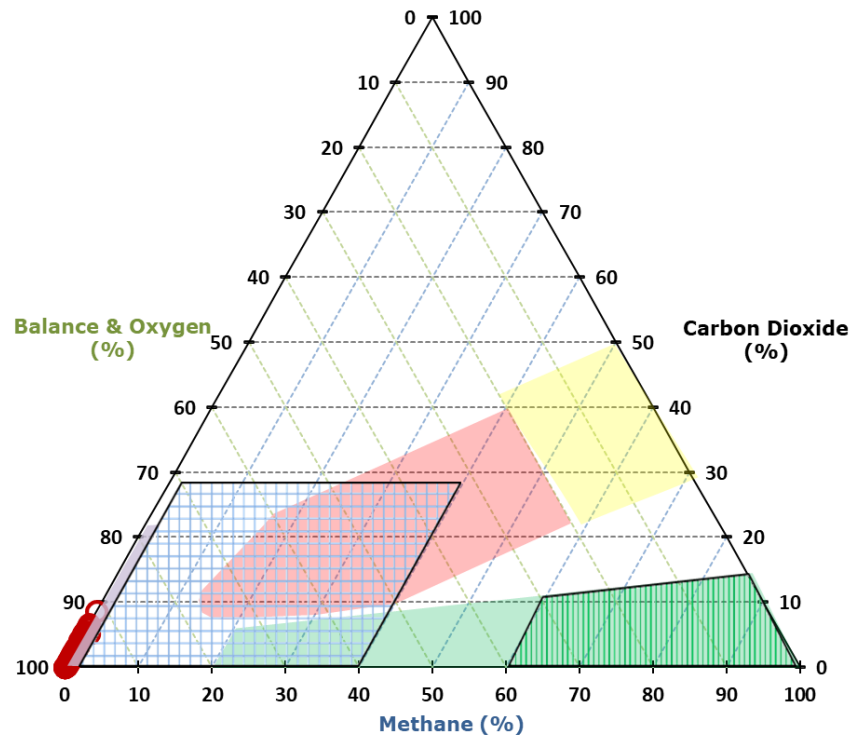
Low volumes of organic material in made ground can also degrade aerobically to produce carbon dioxide or may locally be degrading anaerobically with the process being so slow that the methane completely oxidises to carbon dioxide before reaching the well headspace. In all these cases the carbon dioxide is generated so slowly that it will not be emitted from the ground surface in quantities or at a rate that is sufficient to pose a risk to overlying development.

The screening approaches used in the UK for ground gas have a requirement to **consider** increasing the characterisation of a site identified as Characteristic Situation CS1 based on the Gas Screening Value, if carbon dioxide concentrations exceeding 5% have been recorded.

This increase in characterisation is **not** a mandatory requirement in any of the guidance documents. The distribution of elevated concentrations and the source of the gas should be considered before deciding whether the increase is appropriate. The paper goes on to state that in most cases there will not be any need to increase the classification if the carbon dioxide is caused by biological respiration of small quantities of organic material. Increasing the characteristic situation is only likely to be a requirement if the gas source is one of the high-risk sources (landfills, open mine workings, flow of acidic mine water through rocks).

Based on the methodology described in the paper, a ternary plot has been produced using the results from the continuous monitoring data and is presented below:





The distribution of the gas concentrations over the monitoring period fall within the area associated with microbial respiration of organic matter in soils in accordance with Wilson et. al.

Where gas monitoring results plot in the zone for microbial respiration, there is no requirement to increase the characteristic situation simply because the carbon dioxide concentration exceeds 5%. This, as the paper recommends, is supported by other data and lines of evidence such as the site conceptual model and continuous monitoring data.

Assessment Summary

In summary, based on a lines of evidence approach, we consider that the site should be placed within CS1 classification with regards to made ground and natural strata sources, and ground gas protection measures are not required within structures at the development for these, subject to agreement with the Local Authority, based on the following rationale:

- It is considered that the ground gas concentrations and flows have been monitored to enable a predication of “worst case” conditions; rapid and short pressure decreases are within the dataset.
- The typical threshold concentrations of 5% have been exceeded on several occasions within just RO103, WS109, and WS105.
- The “worst case” data has been plotted on a ternary diagram, which indicates the carbon dioxide concentrations are likely due to microbial respiration, where there is no requirement to increase the characteristic situation simply because the carbon dioxide concentration exceeds 5%.
- CL:AIRE Research Bulletin RB17 states the minimum level of ventilation required to deal with condensation is capable of dealing with quite onerous ground gas regimes. In addition, the requirements of Part L of the building regulations relating to the air tightness of buildings also leads to the need for a well-sealed floor slab (NHBC Foundation, 2009).
- Therefore, the structures on the development will also have an inherent level of ground gas protection, thus adding an additional layer of mitigation to the already low assessed level of risk.

The above ground gas risk assessment does not however include the potential mine gas source, however, this source (as discussed in the CSM table) is indicated to be of very low generational potential.

Furthermore, no elevated gases have been detected in either of the two response zones installed within the Coal Measures, and any potential gas is highly unlikely to migrate upwards to the surface due to the impermeable clay deposits encountered.

8.8 Qualitative Risk Assessment

The CSM has been revised based on the findings of the site investigation and laboratory testing results and these are presented overleaf. Unless stated otherwise, in respect to off-site sources, only risks that are assessed as moderate and above within the preliminary CSM have been carried forward to this section, or where a previously unidentified potential source, pathway and / or receptor has been identified from the recent site works.

Human Health						
Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk	Justification
On site Made Ground Metals, PAH's, asbestos	Root uptake, ingestion, direct contact, inhalation of dusts	End-users	Low likelihood	Medium	Moderate/ Low	The site has been subject to limited development throughout its history. Made ground deposits were localised and generally thin, with only three very localised areas of deeper made ground in the north-western areas of the site. Chemical testing of soils from WS103 showed exceedances in heavy metals (Arsenic and Lead), though no other sample showed any exceedance. If mitigation measures are undertaken in these areas, such as removing the localised contaminated, or incorporating a clean cover system, the risk would be reduced to low. The risk is considered moderate to low at this stage.
On site Made Ground Metals and organic contamination	Migration into/chemical attack of water supply pipelines	Water Pipelines / End users	Unlikely	Medium	Low	Contaminants within the soil/groundwater are unlikely to attack the clean potable water supply pipe. Contaminants should be assessed in accordance with the relevant guidance to determine the correct pipe material and level of precautions required.
On Site Made Ground Ground Gas (carbon dioxide and methane)	Migration into confined spaces, inhalation and asphyxiation/explosion	End-users / property / structures	Unlikely	Medium	Low	No significant elevations of methane, VOCs, carbon monoxide or hydrogen sulphide were detected during the gas monitoring programme and there is not considered to be a credible risk of explosion. Carbon dioxide levels were slightly elevated, which should be considered during works, but is not expected to pose a large risk. The maximum steady flow rate was 0.2l/hr, and the site was underlain by low permeability clay deposits. This will inhibit migration of ground gas to the surface. The overall risk following the ground gas risk assessment is considered to be low.
On Site Made Ground Mine Gas	Migration into confined spaces, inhalation	End-users / property / structures	Unlikely	Severe	Moderate/ Low	The mine shafts encountered on site were noted as backfilled, reducing risk of ground gas generation and migration. However, due to the presence of broken ground and workings across the site, further consideration is needed. The broken ground encountered at varying depths may hold mine gases, which can migrate through the voids. However, due to the low permeability clays across the site, the migration will largely be inhibited. It is advised that structures are not built above the mine shafts, and that these are stabilised prior to site development. Drilling and grouting to stabilise the ground across site is necessary, which will fill the voids and inherently reduce the available space for ground gas generation and migration. Due to this, the overall risk is considered moderate/low.

Controlled Waters						
Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk	Justification
Made Ground PAH's, Metals	Overland flow, / migration through saturated zone	Unnamed river 35m SW (surface waters)	Unlikely	Medium	Low	It is considered that any contaminants associated with the made ground and other previous uses are unlikely to impact the river. This is due to the small quantity of made ground encountered onsite, a lack of any potential contaminants onsite and the low permeability clays across the site which would inhibit any potential contaminant migration. Though one location had heavy metal exceedances (WS103), it is unlikely that the contaminants would migrate and affect surface waters. Furthermore, the proposed developments include gardens which would minimise overland flow to the river, as well as developing roadways to channel water away. Therefore, a low risk is posed.
	Leaching through unsaturated zone / Migration through saturated zone	Secondary Superficial Undifferentiated Aquifer (Ground-water)	Unlikely	Medium	Low	Significant contamination is not present onsite, with only the localised area of WS103 demonstrating heavy metal exceedances. Contaminants are unlikely to be transmitted in the low permeability strata encountered beneath the entire site, and migration of groundwater will be limited. The Secondary undifferentiated aquifer is not considered to be a significantly sensitive receptor. The site is not located within an SPZ and there are no groundwater abstractions for potable water supply within 1km of the site. New roadways with drainage are proposed as part of the development, however, areas of gardens and soft landscaping are also planned. By virtue of the development taking place, this should contribute to an overall "betterment" of groundwater quality. The overall risk is low.
	Migration through saturated zone	Secondary A Bedrock Aquifer (Ground-water)	Unlikely	Medium	Low	There are no groundwater abstraction licences or Source Protection Zones within 1km of the site. New roadways with drainage are proposed as part of the development, however, areas of gardens and soft landscaping are also planned. As stated above, the site is underlain by low permeability deposits, which will inhibit vertical migration, with a new surface water drainage system installed which will further reduce the risk to controlled waters, and by virtue of the development taking place, it should contribute to an overall "betterment" of groundwater quality.

8.9 Outline Remedial Measures

One source of contamination has been identified on site, within the localised made ground in WS103. It is recommended that this material is removed. No other sources of contamination have been identified on site, therefore, no specific remedial measures would then be required for soils in respect to human health for the proposed end use.

Chemical analysis of the natural clay drift deposits has identified these soils to be acceptable for use as subsoil within the proposed garden areas, however further chemical validation samples will be required to confirm this. There is a suitable source of topsoil available on the site.

Alternatively, for the area localised to WS103 only, and where gardens or soft landscaping are present a cover of “clean” subsoil and topsoil should be provided to break the pathway to site end users as described in CIRIA Special Publication 124 - Barriers, liners and cover systems for containment and control of land contamination. This should be 600mm thick in private garden areas and 450mm in soft landscaping areas (Public Open Space – POS). This will allow plants to be grown and prevent undesirable soils mixing or being brought to the surface.

Utilities

The level of protection for the clean potable water supply pipes should be determined using the local water company risk assessment criteria in accordance with UKWIR.

As areas of the site are brownfield, there is the assumption that barrier pipe would be utilised, although requirements should be confirmed by risk assessment and with the water supply company.

Ground Gas Protection Systems

Following the completion of the ground gas monitoring programme, results indicate the site is classified as CS1. The ground gas risk assessment does not however include the potential mine gas source, however, this source is indicated to be of very low generational potential. Furthermore, no elevated gases have been detected in either of the two response zones installed within the Coal Measures, and any potential gas is highly unlikely to migrate upwards to the surface due to the impermeable clay deposits encountered.

As part of any enabling or remedial works, it is recommended that all boreholes with monitoring installations are decommissioned in line with EA guidance in order to remove preferential pathways for ground gas migration.

General

It is recommended that the approval of the Regulators (Local Authority /NHBC / Environment Agency / Mining Remediation Authority) is obtained in regard to the above prior to any irrevocable action is taken at the site.

Once the above bodies have approved the above outline remedial proposals, a Remedial Strategy and a Verification Plan for Ground Gas Protection Measures (if required based on the full ground gas risk assessment) will need to be produced to meet planning requirements and submitted to the regulatory authorities for approval. This will also give guidance to enable a suitably qualified contractor to carry out the works.

In addition, the writing and approval of a Materials Management Plan (MMP) or suitable exemptions/permits will be required to allow re-use of suitable material at the site.

A watching brief is recommended during groundworks for any unidentified sources of contamination. If any gross contaminated material is encountered works should cease in that area and BSL consulted.

Once remediation is complete, verification reports will need to be produced by a suitably qualified independent geo-environmental engineer, such as BSL, in order to achieve regulatory sign off.

8.10 Health and Safety Issues

During the reclamation and construction phases of the site development it will be necessary to protect the health and safety of site personnel. The risk to construction and ground workers is assessed in the table below:

Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk
Made Ground (heavy metals)	Ingestion, direct contact, inhalation of dusts.	Construction Workers	Unlikely	Medium	Low
Asbestos	Ingestion, direct contact, inhalation of dusts.	Construction Workers	Unlikely	Medium	Low
Ground gas	Inhalation in confined spaces/trenches	Construction Workers	Low likelihood	Medium	Moderate / Low

The risk from made ground will be mitigated by standard PPE including gloves. Welfare facilities should be made available to wash before hand to mouth activities.

It is noted that concentrations of carbon dioxide (an asphyxiant) in the soil exceed HSE Workplace Exposure Limits for personnel in the working environment of 1.5% for short term (15 minutes) exposure and/or 0.5% for long term exposure. Furthermore, soil concentrations of oxygen are below the HSE recommendations of 18%.

Soil gas concentrations are not necessarily reflected by those in the breathing zone, all contractors and maintenance workers should be made aware of the possible presence of carbon dioxide and should take all necessary health and safety precautions when working in trenches or confined spaces.

General guidance on these matters is given in the Health and Safety Executive (HSE) document "Protection of Workers and the General Public during the Redevelopment of Contaminated Land". In summary, the following measures are suggested to provide a minimum level of protection:

- All ground workers should be issued with the relevant protective clothing, footwear and gloves. These protective items should not be removed from the site and personnel should be instructed as to why and how they are to be used.
- Hand-washing and boot-washing facilities should be provided.
- Good practices relating to personal hygiene should be adopted on the site.
- The contractor shall satisfy the Health and Safety Executive with regard to any other matters concerning the health, safety and welfare of persons on the site.

8.11 Asbestos

The investigation of asbestos issues within structures was beyond the scope of this report. However, guidance from UK Government indicates that asbestos should be assumed to be present in buildings unless proven otherwise.

Any asbestos within structures will require removal prior to re-development. This will need to be done by a suitably qualified experienced and licensed contractor, who ensures that adequate PPE is provided to operatives, and that all the relevant legislation is adhered to.

Though not encountered during site works or in chemical testing, the presence of any asbestos within the ground will require, a safe system of work to be set up on site to deal with the asbestos risk from the made ground. This may include but be not limited to:

- The use of qualified personnel where required.
- Careful segregation of stockpiles on site.
- Defining transport routes.
- Cleaning down of machinery in designated areas.
- Decontamination unit for ground workers.
- Damping down of soils to prevent dust migration.

Excavations in soils containing asbestos should comply with the CL:AIRE publication 'Interpretation for Managing and working with Asbestos in Soil and Construction and Demolition Materials' (CARSOIL) and CAR 2012. All such works will need to be agreed with the regulatory bodies (HSE and/or LA).

Additional guidance is provided within the BSL methodology Guidance Note in Appendix A.

9.0 WASTE SOIL CLASSIFICATION & ASSESSMENT

9.1 Summary

BSL have undertaken a preliminary assessment of potential excavation waste to arise from the site during redevelopment to:

-
- Classify the excavation waste to arise as either hazardous or non-hazardous.
 - Identify the most sustainable options for the wastes to arise in accordance with the waste hierarchy.
 - Provide a written description of the waste required as part of the Duty of Care.
 - Provide details of “hazardous properties” to complete hazardous waste consignment note (where applicable).
 - Be able to provide a basic classification report to a landfill operator (where waste is destined for landfill disposal).
-

It should be noted that testing requirements for contaminated land risk assessment differ to those for waste classification purposes. Unless otherwise stated, the assessment in this section has been carried out to provide initial indications in respect to disposal of waste soils, however this may not be fully compliant with waste testing requirements or frequencies, with further testing potentially required.

9.2 Soils Waste Classification Procedure

As described in the ‘Waste Duty of Care Code of Practice (2016)’ any substance or object that the holder discards, intends to discard or is required to discard is a waste. It is the responsibility of the waste producer to classify this waste. The classification process is described in the ‘Guidance on the classification and assessment of waste’ WM3 and aims to determine whether the waste is Hazardous or Non-Hazardous to human health and the environment.

Waste classification should be based on soils analyses that are representative of the actual waste load. At the stage of ground investigation, the materials that will become waste have generally not been defined yet, however test data can provide a useful guide to the likely waste classification before it is generated.

Further guidance is provided in Appendix A.

The Landfill Directive (Directive 1999/31/EC on the landfilling of waste, Decision 2003/33/EC and Landfill Regulations 2005) led to the establishment of a methodology for classifying wastes. Wastes first need to be classified based on their total concentrations and classified as either hazardous or non-hazardous waste. WAC testing is only required if the end disposal route is a landfill and WAC analysis must not be used for waste classification.

Wastes can only be accepted at a landfill if they meet the relevant Waste Acceptance Criteria (WAC) for that type of landfill. A waste must comply with the WAC limits for the relevant landfill, otherwise the soil will need to be pre-treated. There are three different WAC criteria, these are:

-
- Inert waste.
 - Stable Non-Reactive Hazardous Waste (SNRHW).
 - Hazardous waste.
-

Details of how material should be classified for waste disposal are presented in the BSL Methodology and Guidance in Appendix A and are summarised in the table below:

Classification based on Total Concentrations ¹	PRIOR TO LEAVING SITE			
	Non-Hazardous Waste		Hazardous Waste	
	IF SOILS CANNOT BE RE-USED ELSEWHERE AND MUST GO TO LANDFILL			
WAC testing	Below inert WAC limit values	Above inert WAC limit values	Below hazardous WAC limit values ⁴	> WAC limit values
Landfill requirements	INERT landfill	NON-HAZARDOUS landfill ²	HAZARDOUS landfill	PRE-TREATMENT ³

1 Total concentrations are defined as tests results on solids as opposed to leachate (i.e. a liquid).

2 Individual sites may have certain limit values pre-determined in their licence.

3 After pre-treatment the material characteristics may have changed to an extent that allow the soil to be re-classified.

4 Possibility that wastes could be classified as stable Nonreactive HAZARDOUS waste in non-hazardous Landfill (e.g. soils containing low concentrations of asbestos, gypsum or sulphate bearing soils).

Inert Waste

The possibility of automatic inert classification of the naturally occurring “clean” soils should be explored in accordance with Section 4.3 of the EA guidance document. See Appendix A for further guidance.

9.3 Waste Classification and Waste Acceptance Criteria (WAC)

We have reviewed the testing results and assessed them through a waste classification database (HazWasteOnline™) which allows users to code and classify waste as defined in the EWC (European Waste Catalogue) based on EC Regulation 1272/2008 on the Classification, Labelling and Packaging of Substances and Mixtures (CLP) and latest Environment Agency guidance (WM3 “Guidance on the classification and assessment of waste -Technical Guidance”).

The samples tested were screened against assessment criteria within WM3 using the HazWasteOnline tool to assess whether they contained any contaminants in the hazardous range.

The Waste Classification Report results are presented in Appendix F Locations of hazardous soils are presented in the table below, alongside the WAC analysis test results.

Based on the waste classification database assessment, all tested soils have been classified as **non-hazardous**.

Note that further testing of the soils (WAC testing) may be required on the actual arisings in order to satisfactorily categorise the soil for its suitability for disposal to landfill.

Waste Containing Asbestos

Should soils contain asbestos, the concentration and type of asbestos identified, in addition to the chemical composition (i.e. hazardous or non-hazardous detailed above), will determine which waste code is applicable to the soils and which landfill will accept it as summarised below:

Waste	Conc. by Weight (%)	EWC 2002 Catalogue Entry Code	Waste Disposal Route
Non-hazardous containing asbestos fibres	<0.001 - <0.1%	17 05 04 (soil and stones other than those mentioned in 17 05 03*)	Non-hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a stable non-reactive hazardous landfill site.
Hazardous containing asbestos fibres	<0.001 - <0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a hazardous landfill site.
Non-hazardous soils containing asbestos fibres	<0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill authorised to receive asbestos, or in a stable non-reactive hazardous waste cell at a non-hazardous landfill authorised to receive asbestos.

Waste	Conc. by Weight (%)	EW C 2002 Catalogue Entry Code	Waste Disposal Route
Non-hazardous Soils containing ACM (Mechanically separable)	>0.1%	17 06 05 (construction material containing asbestos) 17 05 04 (soil and stones other than those mentioned in 17 05 03*)	ACMs disposed of at a hazardous landfill authorised to receive asbestos, or in a stable non-reactive hazardous waste cell at a non-hazardous landfill authorised to receive asbestos. Soils should be disposed of at a non-hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a stable non-reactive hazardous landfill site.
Hazardous soils containing ACM	>0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a hazardous landfill site.

General

Following the classification of waste materials, the options available for the waste can be considered in the context of the waste hierarchy as below:

- Onsite re-use (with or without prior treatment) under suitable exceptions/permits.
- Offsite processing for recycling or recovery e.g. screening.
- Offsite disposal (with or without prior treatment) i.e. landfill.

Where feasible, efforts should be made to retain soils for onsite re-use to minimise costs and maximise the sustainability of projects.

If any gross hydrocarbon contaminated material is encountered during the construction phase, it is possible that this may be classified as hazardous and testing should be undertaken at that time.

Where it is necessary to dispose material off site it is recommended that materials are segregated and sufficient time is allowed to further classify the actual soil arisings that constitute the waste, including discussion with landfill sites and waste transfer stations to find the best disposal route. It is illegal to dilute and mix soils without a suitable permit.

Where possible, the option that the soils could be recycled at a suitable local waste treatment plant or transfer station rather than a landfill disposal route should be explored.

9.4 Re-use of Soils

By definition in law, any material excavated from the ground becomes waste at the moment of excavation. If that soil (now a “waste”) is then placed on another part of the development site (or used on another development site) without an appropriate materials management plan, permit or exemption being in place, by law this material is defined as “illegally deposited waste”.

In order to comply with UK legislation and avoid excessive costs, if the re-use of soils is proposed on site, this should be done in accordance with the relevant exemptions or permits in place.

Soils Re-use Under DoWCoP

One of the main industry mechanisms for allowing the re-use of soils in construction is the CL:AIRE “Development Industry Code of Practice for the Definition of Waste” (CL:AIRE DoWCoP) also known as a Materials Management Plan (MMP). Further guidance is provided in the BSL Methodology and Guidance in Appendix A.

In order to re-use soils under the DoWCoP, there are four key criteria that need to be met:

-
- The aims and objectives of the project meet the requirements of the Waste Framework Directive (does not harm human health or the environment).
 - The soils can be demonstrated to be suitable for use (backed up by chemical/geotechnical testing and assessment).
 - There is certainty of use (planning consents are in place alongside materials tracking, which should be in place as part of good site practice in any case).
 - Quantity (the quantity of materials used should be known).
-

Information on existing site levels, proposed levels, volumes generated (e.g. foundation / drainage excavation arisings) would need to be known in order to complete the MMP.

If the DoWCoP is the chosen route, the MMP should be in place and declared by a Qualified Persons (QP) before works commence, otherwise excavated soils could constitute an illegal deposit of waste and enforcement action could be taken by the EA and HMRC.

Once the project is complete, a verification report detailing soils re-use/import will need to be produced and submitted to CL:AIRE, which may be subject to a random audit process. Sites found to be non-compliant with the CoP can be referred to the EA for further investigation.

Note that for re-use of landfilled materials or mining wastes, the DoWCoP may not apply and a Waste Recovery Permit (or others) may be required. Liaison with the Environment Agency would be needed on a case by case basis to determine the best option.

Re-use of soils containing asbestos should comply with the CL:AIRE publication 'Interpretation for Managing and working with Asbestos in Soil and Construction and Demolition Materials' (CAR-SOIL™) and CAR 2012.

In terms of the re-use of brick/concrete crush materials, the DoWCoP does cover aggregates, but only on the site of origin, and the EA WRAP aggregate Quality Protocol might best apply to ensure quality standards, which are discussed further below.

Soils Re-use under Exemptions and Permits

Other potentially suitable re-use mechanisms may include U1 Exemptions, WRAP quality protocols (for aggregates) or Waste Framework Directive (WFD) Exclusions, amongst other mechanisms. Further details are provided in Appendix A.

10.0 CONCLUSIONS

10.1 Geo-Environmental

Geo-Environmental – Human Health – Soils

Testing of the made ground at the site revealed two localised exceedances of heavy metals (Arsenic and Lead) within the made ground at WS103. This is considered to pose a potential risk to human health, and remedial measures are required either in the form of source removal or a clean cover system.

Geo-Environmental – Ground Gases and Vapours

Following the completion of the ground gas monitoring programme, results indicate the site is classified as CS1. The ground gas risk assessment does not however include the potential mine gas source, however, this source is indicated to be of very low generational potential. Furthermore, no elevated gases have been detected in either of the two response zones installed within the Coal Measures, and any potential gas is highly unlikely to migrate upwards to the surface due to the impermeable clay deposits encountered.

Geo-Environmental – Controlled Waters

The overall risk to controlled waters is considered to be low to very low and no further action is required.

Waste

Waste classification at the site has revealed all tested soils to be non-hazardous.

10.2 Geotechnical

Foundations

Strip foundations are considered the most suitable for this development. Based on the medium volume change potential, foundations should be placed at a minimum of 0.90m bgl into the natural cohesive deposits and deepened near trees and hedges. Allowable bearing capacities are 230 kN/m² at 0.90m bgl, increasing to 300 kN/m² from 1.50m bgl. This adopts a factor of safety of 3 which should limit settlements to within acceptable limits.

Localised granular sand strata were encountered in eight locations across the site as detailed in section 5.4. In these locations, the sand was found to be directly underlain by solid bedrock. Therefore, foundations in these locations should be placed upon the granular sand strata, where unacceptable differential settlement would not be anticipated. At 0.80m bgl, an allowable bearing capacity not exceeding 150 kN/m² may be assumed. This adopts a factor of safety of 3 which should limit settlements to within acceptable limits.

Floor slabs

Both suspended and ground bearing floor slabs may be adopted.

Concrete classification

Made ground and solid geology (Sandstone) are classed as DS-1 and AC-1s, and natural superficial strata are classed as DS-2 and AC-1s.

Highways

CBR values are likely to be <2% within both natural clays and made ground on site.

Drainage (SuDS)

The use of sustainable drainage systems, such as traditional soakaways within the natural ground, is not likely to be feasible due to the presence of low permeability cohesive strata underlying the site, and lack of drainage rates obtained from soakaway testing.

Mining

In accordance with CIRIA C758 and the 10t criterion, there is a risk on the site from historic coal mining activities. Drilling and grouting will be required to enable development across the site, along with the suitable capping or grouting, or both, of the two onsite mine shafts.

10.3 Further Work

The following further work is considered necessary to progress the site to construction phase:

- Tree survey by a qualified arboriculturist.
 - Demolition survey, if required.
 - Design of the Drill and Grout specification.
 - Detailed foundation design, including foundation zonation plan and depth schedule.
 - Design of Remedial Strategy and confirmation with the Local Authority, NHBC, and the Mining Remediation Authority, if required.
 - Production of Materials Management Plan (MMP) under the CL:AIRE DoWCoP, if required.
 - Implementation of the Drill and Grout Specification, and verification reporting upon completion.
 - Implementation of the Remedial Strategy and verification of the remedial works, if required.
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11.0 ABBREVIATIONS AND DEFINITIONS

GLOSSARY	
Term / Abbreviation	Definition
AST	Above Ground Storage Tank.
B(a)P	Benzo (a) Pyrene.
BGS	British Geological Survey.
BRE	Building Research Establishment.
BS	British Standard.
BSL	Brownfield Solutions Ltd.
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes.
CBR	California Bearing Ratio (used in pavement/highways design).
CAR 2012	Control of Asbestos Regulations (2012).
CBCB	Cheshire Brine Compensation Board.
CBCD	Cheshire Brine Compensation District.
CBR	California Bearing Ratio.
CIEH	Chartered Institute of Environmental Health.
CIRIA	Construction Industry Research Association.
CL:AIRE	Contaminated Land: Applications in Real Environments.
CLEA	Contaminated Land Exposure Assessment.
CLO	Contaminated Land Officer.
COMAH	Control of Major Accident Hazards.
Contamination	Presence of a substance which is in, on or under land, and which has the potential to cause significant harm or to cause significant pollution of controlled water. There is no assumption in this definition that harm results from the presence of the contamination. Naturally enhanced concentrations of harmful substances can fall within this definition of contamination. Contamination may relate to soils, surface water, groundwater or ground gas.
Controlled Waters	Inland freshwater (any lake, pond or watercourse above the freshwater limit), water contained in underground strata and any coastal water between the limit of highest tide or the freshwater line to the three-mile limit of territorial waters.
CPT	Cone Penetration Test.
CSM	Conceptual Site Model. A schematic hypothesis of the nature and sources of contamination, potential migration pathways (including description of the ground and groundwater) and potential receptors, developed on the basis of the information from the preliminary investigation and refined during subsequent phases of investigation and which is an essential part of the risk assessment process. The conceptual site model is initially derived from the information obtained by the preliminary investigation (i.e. the Phase I Desk Study). This conceptual model is used to focus subsequent investigations, where these are considered to be necessary, in order to meet the objectives of the investigations and the risk assessment. The results of intrusive investigations can provide additional data that can be used to further refine the conceptual site model.
DCP	Dynamic Cone Penetrometer.
DNAPL	Dense Non-Aqueous Phase Liquid.
DoWCoP	Definition of Waste Code of Practice.
DWS	Drinking Water Standard.
EA	Environment Agency.
EHO	Environmental health Officer.
EQS	Environmental Quality Standard.

GLOSSARY	
Term / Abbreviation	Definition
GAC	Generic Assessment Criteria.
GDR	Geotechnical Design Report.
GFR	Geotechnical Feedback Report.
GIR	Ground Investigation Report.
GSV	Gas Screening Value.
Harm	Adverse effect on the health of living organisms, or other interference with ecological systems of which they form part, and, in the case of human health, including property/structures and water supply pipelines.
Hazard	Inherently dangerous quality of a substance, procedure or event.
HDPE	High Density Polyethylene.
HSV	Hand Shear Vane.
K	Modulus of Subgrade Reaction.
LCRM	Land Contamination: Risk Management (EA guidance).
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene).
LOD	Limit of Detection (for particular method adopted).
MMP	Materials Management Plan.
Mv	Modulus of Volume of Compressibility.
ND	Not Detected.
NHBC	National House Building Council.
NR	Not Recorded.
OS	Ordnance Survey.
PAH	Polycyclic Aromatic Hydrocarbon.
Pathway	Mechanism or route by which a contaminant comes into contact with, or otherwise affects, a receptor.
PCB	Poly-Chlorinated Biphenyl.
PCSM	Preliminary Conceptual Site Model.
pH	Scale used to specify how acidic or basic a water-based solution is.
PHC	Petroleum Hydrocarbons.
PID	Photo Ionisation Detector.
PNEC	Predicted No-Effect Concentration.
Precision	Level of agreement within a series of measurements of a parameter.
PSD	Particle Size Distribution.
PVC	Polyvinyl Chloride.
Receptor	Human health, living organisms, ecological systems, controlled waters (surface waters and groundwater within aquifers), atmosphere, structures and utilities that could potentially be adversely affected by contaminant(s).
Risk	Probability of the occurrence, magnitude and consequences of an unwanted adverse effect on a receptor.
Risk Assessment	Process of establishing, to the extent possible, the existence, nature and significance of risk.
Sampling	Methods and techniques used to obtain a representative sample of the material under investigation.
SOM	Soil Organic Matter.
Source	Location from which contamination is, or was, derived. This could possibly be the location of the highest soil, groundwater or gas concentration of the contaminant(s).
SPT	Standard Penetration Test.
SVOCs	Semi Volatile Organic Compounds.
TOC	Total Organic Carbon.

GLOSSARY	
Term / Abbreviation	Definition
TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group).
TVOCs	Total volatile organic compounds.
UCS	Unconfined Compressive Strength.
Uncertainty	Parameter, associated with the result of a measurement that characterises the dispersion of the values that could reasonably be attributed to the measurement.
UST	Underground Storage Tank.
UXO	Unexploded Ordnance.
VCCs	Vibro Concrete Columns.
VSCs	Vibro Stone Columns
VOCs	Volatile Organic Compounds.
WAC	Waste Assessment Criteria.
WFD (in waste context)	Waste Framework Directive.
WFD (in water context)	Water Framework Directive.
Units	Definition
°	Degrees
Φ	Phi angle (in degrees)
g/l	Grams per Litre
Km	Kilometres
kPa	Kilo Pascal (Equivalent to kN/m ²)
kN/m ² /mm	Kilo Newton per metered squared per millimeter
kN/m ²	Kilo Newtons per metre squared
kPa	Kilo Pascal (Equivalent to kN/m ²)
l/hr	Litres per hour
MJ/kg	Mega joule per kilogram
MN	Mega Newton
M ² /MN	Mega Newton per metre squared
M	Metres
m bgl	Metres Below Ground Level
m OD	Metres Ordnance Datum (sea level)
µg/l	Micrograms per Litre (parts per billion)
µm	Micrometre
mb	Millibars (atmospheric pressure)
mg/kg	Milligrams per kilogram (parts per million)
mg/m ³	Milligram per metre cubed
mm	Millimetre
ppb	Parts Per Billion
Ppm	Parts Per Million

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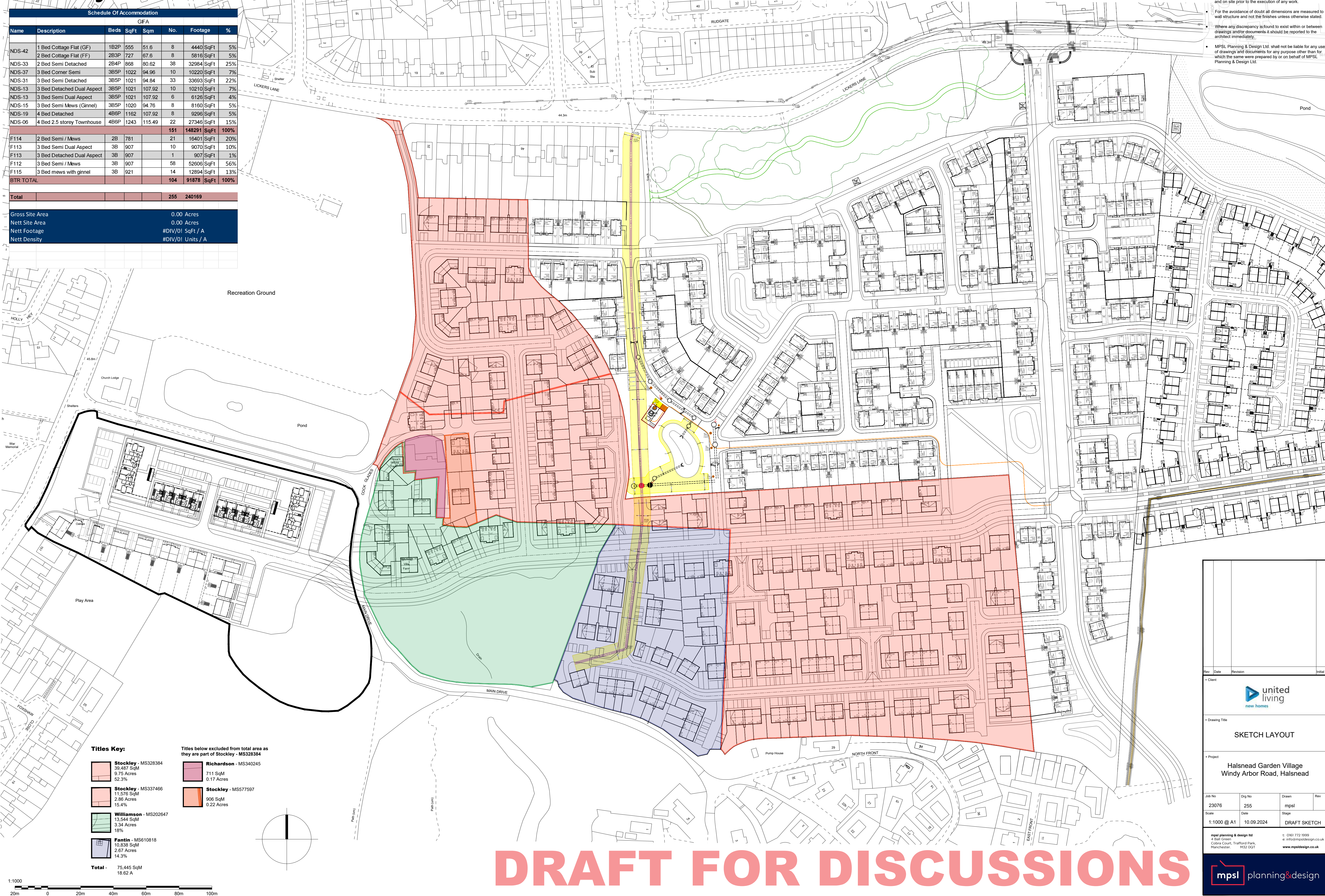
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DRAWINGS

Windy Arbor Road, Halsnead



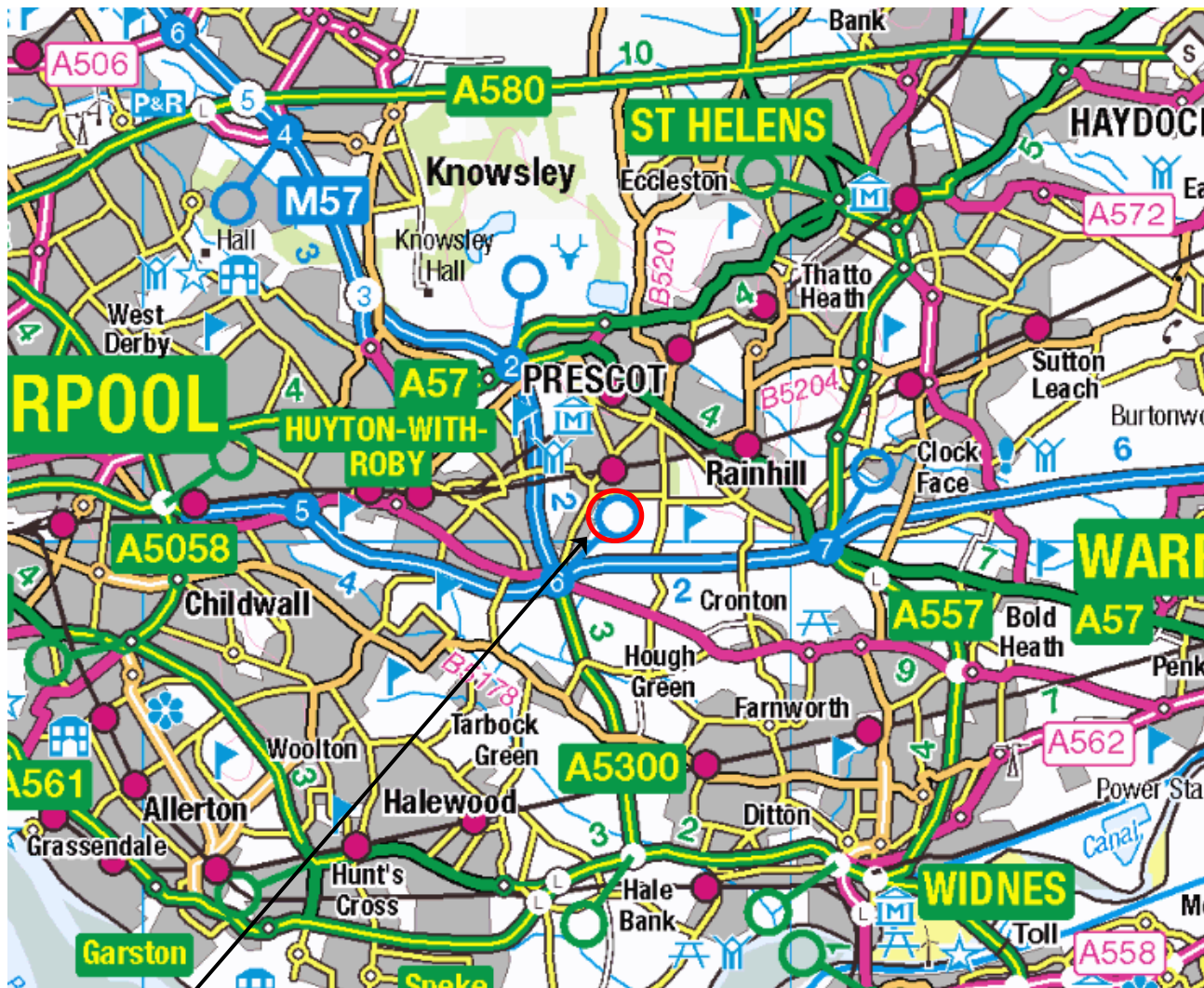
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Only scale for 'Town and Country Planning Act 1990' services. For construction purposes, work to figured dimensions only. All dimensions to be checked with MPSL and on site prior to the execution of any work.

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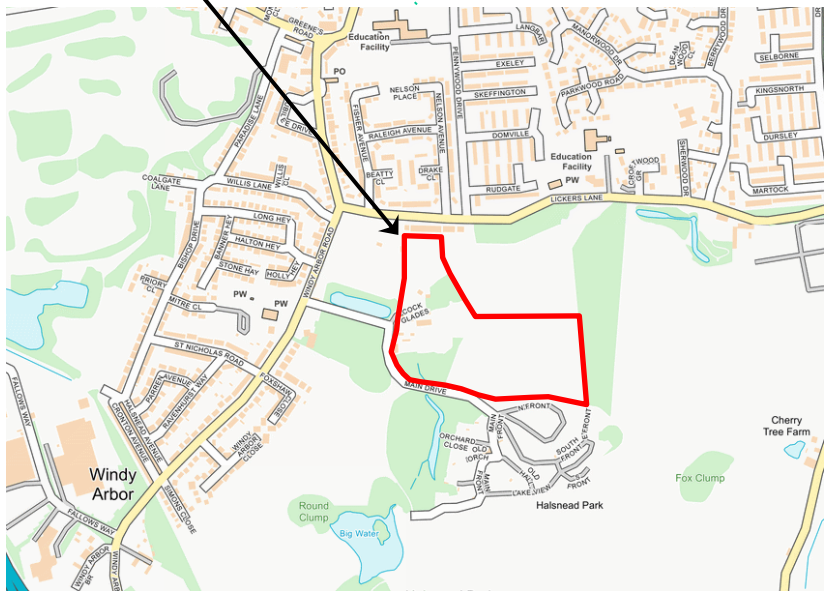
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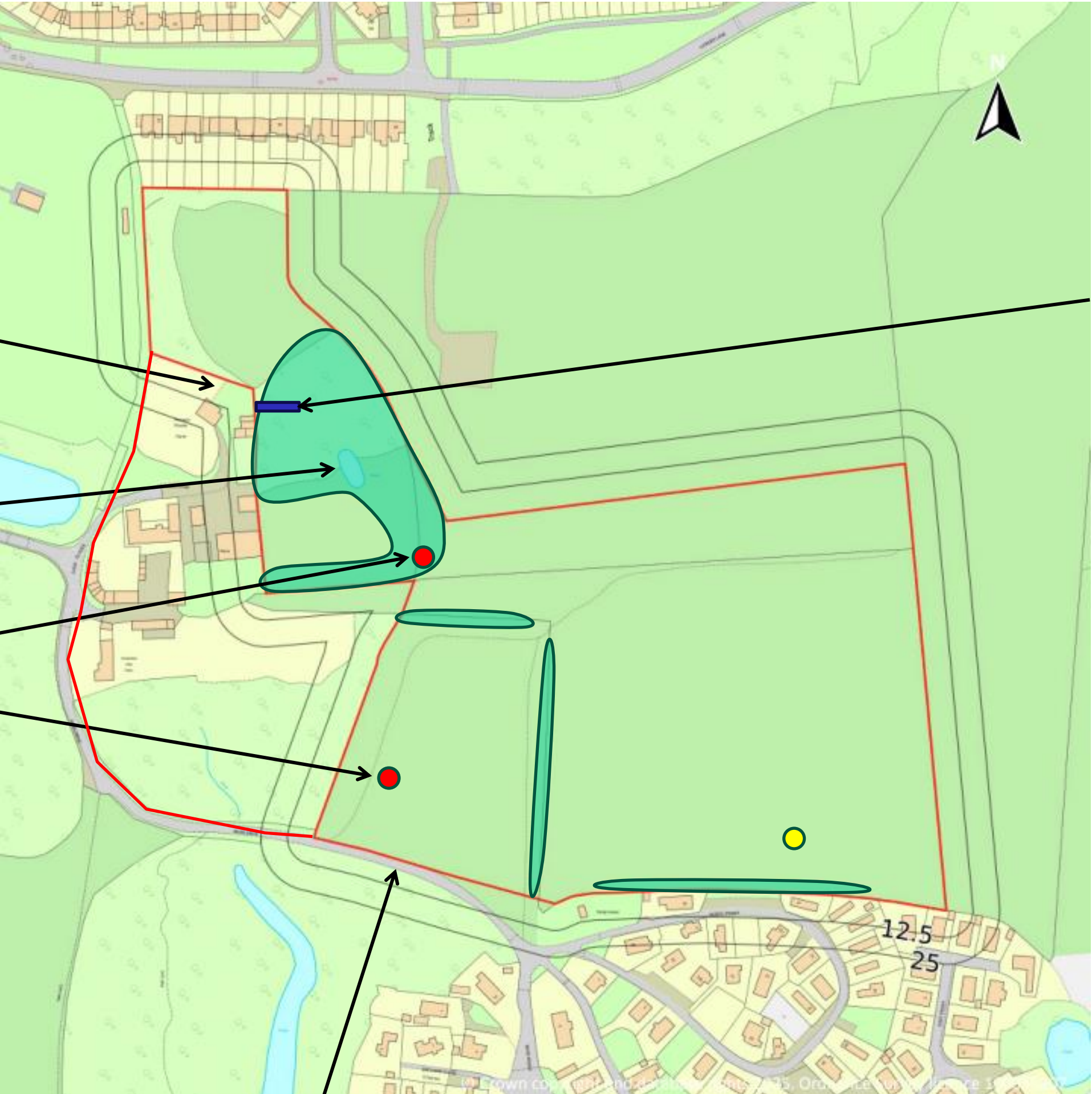
SITE LOCATION

NEAREST POSTCODE: L35 3PW

SITE ENTRANCE WHAT3WORDS:
///GATES.MAYBE.SWEEP



REV	DATE	DESCRIPTION	BY	CKD
A	07/02/25	PLAN CHANGE	SD	
 BROWNFIELD SOLUTIONS LTD GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE				
CLIENT UNITED LIVING				
PROJECT TITLE HALSNEAD GARDENS PHASE 1				
DRAWING TITLE SITE LOCATION PLAN				
DRAWING No. C5980/01	REVISION -	SCALE NTS	DATE 10/01/25	
DRAWN BY SD		CHECKED BY JM		



GATED
SITE
ACCESS

SMALL POND

RAISED
MANHOLE
COVER

SITE ACCESS

3FT HIGH
BRICK WALL

KEY

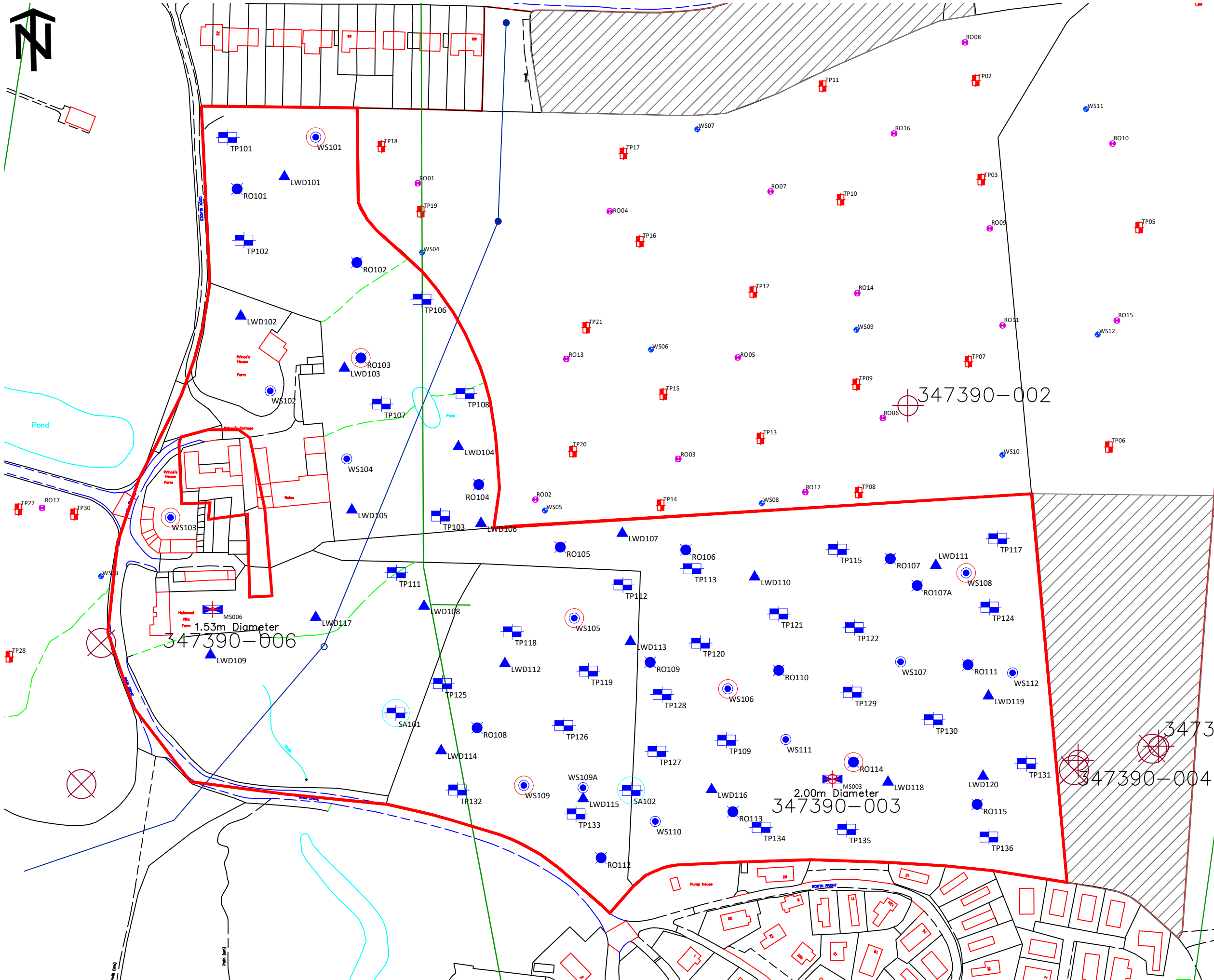
- APPROXIMATE SITE BOUNDARY
- DENSE VEGETATION
- BRICK WALL
- RAISED MANHOLE COVERS
- SUSPECTED MINE SHAFT

- NOTES
- ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
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REV	DATE	DESCRIPTION	BY	CKD



CLIENT UNITED LIVING			
PROJECT TITLE HALSNEAD GARDENS PHASE 1			
DRAWING TITLE SITE FEATURES PLAN			
DRAWING No. C5980/02	REVISION -	SCALE NTS	DATE 14/01/25
DRAWN BY JL		CHECKED BY JEM	



KEY	
	APPROXIMATE SITE BOUNDARY
	TRIAL PIT
	TRIAL TRENCH
	WINDOW SAMPLE BOREHOLE
	ROTARY OPEN BOREHOLE
	LIGHT WEIGHT DEFLECTOMETER
	BOREHOLE INSTALLATION
	FAULT LINE
	SOAKWAY TEST
	RECORDED MINE ENTRY

BSL (2017)	
	PREVIOUS SI BOUDARY
	TRIAL PIT
	WINDOW SAMPLE BOREHOLE
	ROTARY OPEN BOREHOLE

- NOTES
1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
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CLIENT		UNITED LIVING	
PROJECT TITLE		HALSNEAD PHASE 1	
DRAWING TITLE		EXPLORATORY HOLE LOCATION PLAN	
DRAWING No.	REVISION	SCALE	DATE
C5980/03	-	NTS	03/03/25
DRAWN BY		CHECKED BY	
MAS		JM	

PHOTOGRAPHS

Photo Descriptions

PHOTO NO.	DETAILS
1	Overview photo of shaft investigation
2	Shaft discovery
3	Shaft backfill
4	Shaft diameter close up



PHOTO 1



PHOTO 2



PHOTO 3



PHOTO 4

REV	DATE	DESCRIPTION	BY	CKD



CLIENT UNITED LIVING	
PROJECT TITLE HALSNEAD GARDENS	
TITLE MINE SHAFT INVESTIGATION MS003	
Associated Document Ref No. MAS/C5980/13951	PAGE 1 of 1
COMPLIED BY MAS	CHECKED BY JM



PHOTO 1



PHOTO 2



PHOTO 3



PHOTO 4

Photo Descriptions

PHOTO NO.	DETAILS
1	TRENCH IN SUBSIDENCE AREA
2	CHANGE IN GROUND CONDITIONS
3	SHAFT OUTLINE
4	SHAFT OUTLINE

REV	DATE	DESCRIPTION	BY	CKD



CLIENT UNITED LIVING	
PROJECT TITLE HALSNEAD GARDENS	
TITLE MINE SHAFT INVESTIGATION MS006	
Associated Document Ref No. MAS/C5980/13951	PAGE 1 of 1
COMPLIED BY MAS	CHECKED BY JM

APPENDIX A

BSL Methodology and Guidance

BSL Phase I & II Geo-Environmental Assessment Reports - Methodology and Guidance

Background

This Appendix provides information on the approaches, methods and guidance used by Brownfield Solutions Ltd in the preparation of this report.

The term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential soils and groundwater contamination). The term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements). It should be noted that this is an integrated investigation and these two main aspects are related, unless otherwise specified within the report.

Phase I reports are written in general accordance with the description of a Preliminary Investigation as defined in BS10175:2011+A2:2017 and are also produced in general accordance with the recommendations for a Tier 1 Preliminary Risk Assessment as described in LCRM guidance.

The first stage of the investigation and assessment of a site is the Preliminary Investigation/Tier 1 Preliminary Risk Assessment, often referred to as a Phase 1 Desk Study, comprising a desk study and walk-over survey and collation of desk-based searches, which culminates in the Preliminary Risk Assessment and the development of a preliminary/initial **Conceptual Site Model (CSM)**. From this are identified any potential geotechnical and geo-environmental hazards and the qualitative degree of risk associated with them. In the case of the geotechnical hazard identification, this is referred to as the **Ground Model**.

From the geo-environmental perspective, the hazard Identification process uses professional judgement to evaluate all the hazards in terms of possible contaminant linkages (of source-pathway-receptor). Possible contaminant linkages are potentially unacceptable risks in terms of the current contaminated land regime legal framework and require either remediation or further assessment. These are normally addressed via intrusive ground investigation and generic risk assessment as part of Phase II investigations and reports.

The second stage is the Ground Investigation, Generic Risk Assessment and Geotechnical Interpretation. This represents the further assessment mentioned above. The Ground Investigation comprises field work and laboratory testing based on the findings of the Preliminary Risk Assessment, to reduce uncertainty in the geotechnical and geo-environmental hazard identification. This may include an exploratory, a detailed or/and supplementary Investigations as described in BS 10175:2011+A2:2017. Phase II Assessments are produced in general accordance with the recommendations for a Tier 2 Generic Quantitative Risk Assessment as described in LCRM guidance and are also intended to fulfil the requirements of a Ground Investigation Report (GIR) as detailed in BS EN 1997-2:2007.

Contaminated Land - Legislative Background

Land contamination can be addressed in several ways, e.g. during planning, under Part 2A, following an incident, during an investigation into environmental damages, or during the application of an environmental permit, or its surrender.

For the planning process the key test is **as a minimum the site cannot be determined as contaminated land**, e.g. there is not significant harm, significant possibility of significant harm to human health or that there is not significant harm to, or the significant possibility that the pollution of controlled waters will occur.

Environmental liabilities and risks have been evaluated in terms of a source -pathway - target relationship in accordance with the approach set out in:

-  The 1995 Environment Act.
-  The Contaminated Land Statutory Guidance, DEFRA – April 2012.
-  The Contaminated Land (England) Regulations 2006.
-  The Contaminated Land (England) Amendment Regulations 2012.
-  Water Resources Act.
-  Water Framework Directive.
-  Environmental Damage Regulations.
-  Environment Agency (EA) - Land Contamination Risk Management (LCRM) 2019.

Contaminated land is defined within the legislative framework as land which is in such condition by reason of substances in, on or under the land that:

- 1) Significant harm is being caused or there is a significant possibility of such harm being caused.
- 2) Significant pollution of controlled waters is being or is likely to be caused.

The potential for harm is based on the presence of three factors:

Source - substances that are potential contaminants or pollutants that may cause harm.

Pathway - a potential route by which contaminants can move from the source to the receptor, and the impact of that migration on the source e.g. attenuation.

Receptor - a receptor that may be harmed, for example the water environment, humans and water, considering the sensitivity of the receptor.

Where a source, pathway and target are all present a pollutant linkage exists and there is potential for harm to be caused.



Where any one of the “pollution linkages” between the above is absent there is deemed to be no risk.

The presence of a source does not automatically imply that a contamination problem exists, since contamination must be defined in terms of pollutant linkages and unacceptable risk of harm. The nature and importance of both pathways and receptors are site specific and will vary according to the intended end use of the site, its characteristics and its surroundings.

The key principle which supports the S-P-R approach is ‘suitable for use’ criteria. This requires remedial action only where contamination is considered to pose unacceptable actual or potential risks to health or the environment and, taking into account the proposed use of the site.

Relevant Guidance Documents

This report has been prepared in accordance with the list of guidance below, however the list is not exhaustive:

- DETR: Circular 02/2000: Environmental Protection Act 1990: Part IIA: Contaminated land. 2012.
- Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA1990, May 2002.
- BS 10175:2011+A2:2017.
- Environment Agency (EA) - Land Contamination Risk Management (LCRM). 2019.
- Groundwater Protection <https://www.gov.uk/government/collections/groundwater-protection>
- UK Technical Advisory Group (UKTAG) - Water Framework Directive
- Incidents and their classification: the Common Incident Classification Scheme (CICS) – Used by the Environment Agency to classify pollution incidents.

Relevant Legislative Documents

The following is a non-exhaustive list of legislative framework documents that has been considered in the production of this report:

- The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012).
- The Environment Protection Act (1990).
- The Water Resources Act (1991).
- The Environment Act (1995).
- The Contaminated Land (England) Act (2000).
- The Pollution Prevention and Control (England and Wales) Regulations (2000).
- The Landfill Regulations (England and Wales) Regulations (2002).
- The Landfill (England and Wales) (Amendment) Regulations (2004).
- Contaminated Land (England) Regulations (2012).
- The Environmental Damage (Prevention and Remediation) Regulations (2009).
- Environmental Permitting Regulations (England and Wales) Regulations (2010).
- The Water Environment (Water Framework Directive) (England and Wales) Regulations (2017).
- Health and Safety at Work Act.
- National Planning Policy Framework (NPPF) – latest version.

Contaminated Land Risk Assessment Approach

Contaminated Land Risk Assessment is a technique that identifies and considers the associated risk, determines whether the risks are significant and whether action needs to be taken. The four main stages of risk assessment are:



LCRM outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. The starting point of the risk assessment is to identify the context of the problem and the objectives of the process. Under LCRM, three tiers of risk assessment exist – Stage/Tier Preliminary Risk Assessment, Stage 2 Generic Quantitative and Stage 3 Detailed Quantitative.

Further information can be found at the below site:

<https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

Formulating and developing a conceptual model for the site is an important requirement of risk assessment, this supports the identification and assessment of pollutant linkages. Development of the conceptual model forms the main part of preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process.

Risk is a combination of the likelihood of an event occurring and the magnitude of its consequences. Therefore, both the likelihood and the consequences of an event must be taken into account when assessing risk.

The risk assessment process needs to take into account the degree of confidence required in decisions. Identification of uncertainties is an essential step in risk assessment.

The likelihood of an event is classified on a four-point system using the following terms and definitions from CIRIA C552, with reference to Incidents and their classification: the Common Incident Classification Scheme (CICS), Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance 2012 and other guidance as appropriate which will be detailed within the main body of the report if applied.

The likelihood of a given receptor being impacted is related to a number of factors, e.g. the geology which could inhibit contaminant migration. For example, a site with a significant thickness of clay between it and a receptor may reduce migration of contamination via the subsurface, which will reduce the likelihood of a given receptor being impacted. The geology or drainage for example could offer a preferential pathway e.g. mines shafts/faults increasing the likelihood and potential magnitude of an impact. The depth of contamination will also affect the exposure pathway, for example petroleum hydrocarbons at depth are unlikely to reach a receptor via dermal contact but could via vapour pathways which will influence the likelihood of an impact being felt e.g. if there are no buildings on site.

The terms and definitions used for the assessment of the likelihood are provided below:

High likelihood: There is a pollution linkage and an event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.

Examples - Extensive areas with concentrations above saturation limits for mobile contamination e.g. petroleum hydrocarbons within the water table.

Likely: There is a pollution linkage and all the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term.

Examples – Localised areas of contaminants with concentrations above saturation limits for mobile contamination e.g. localised petroleum hydrocarbons within the water table; shallow contamination above relevant human health generic assessment criteria is present with little or no hardstanding,

Low likelihood: There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain even over a longer period such event would take place, and is less likely in the short term.

Examples - A thickness/distance of low permeability deposits preventing contaminant migration to a receptor is present; a site is mostly covered hard standing preventing exposure to soil contamination.

Unlikely: There is a pollution linkage but circumstances are such that it is improbable the event would occur even in the long term.

Examples – A site is underlain by a substantial thickness of low permeability clays, between the source and potential receptors which will inhibit significantly, but not completely rule out migration to sensitive receptors.

The severity is also classified using a system based on CIRIA C552, with reference to Incidents and their classification: the Common Incident Classification Scheme (CICS), Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance 2012 and other guidance as appropriate which will be detailed within the main body of the report, if applied. The terms and definitions are:

Severe: Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. A short-term risk to a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);

Examples – High concentrations of contaminant on surface of recreation area, major spillage of contaminants from site into controlled waters, explosion causing building to collapse.

Medium: Chronic damage to human health ('significant harm' as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);

Examples - Concentrations of contaminants exceed the generic assessment criteria, leaching of contaminants from a site to a Principal or Secondary Aquifer, death of species within a designated nature reserve.

Mild: Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures, services or the environment.

Examples – Pollution of non-classified groundwater or damage to buildings rendering it unsafe to occupy.

Minor: harm, not necessarily significant harm, which may result in financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by use of personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.

Examples – Presence of contaminants at such concentrations PPE is required during site work, loss of plants in landscaping scheme or discolouration of concrete.

Once the likelihood and severity have been determined, a risk category can be assigned using the table below.

		Consequences			
		Severe	Medium	Mild	Minor
Probability	Highly likely	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very Low	Very low
	Negligible	Negligible Risk / No Linkage			

Definitions of the risk categories obtained from the above table are as follows together with an assessment of the further work that might be required:

Very high: There is a high probability that severe harm could arise to a designated receptor from an identified hazard or there is evidence that severe harm is currently happening. This risk, if realised, could result in substantial liability. Urgent investigation and remediation are likely to be required.

High: Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required and remedial works may be necessary in the short term and are likely over the longer term.

Moderate: It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it would be more likely to be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term.

Low: It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.

Very Low: There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

Some linkages may be identified which constitutes a theoretical connection between a source and a receptor, but professional judgement shows them not to be possible for some reason. These are labelled 'negligible risk' and 'no linkage' in the summary table, which give rise to an overall **negligible** risk category and no further action is required.

Contaminated Land Screening Values

In assessing the potential for contamination Brownfield Solutions Limited (BSL) follows UK guidance and current best practice.

General

The purpose of using generic Tier 1 screening levels is to have a simple means of assessing the potential contamination of a site and to inform decisions on whether further investigation is warranted or whether an option to undertake remedial action based on the data to hand is cost effective.

Human Health

Current UK guidance on risks to human health is provided by DEFRA and the Environment Agency (EA). Under the land use planning system where the aim is to demonstrate 'suitability for use' the key will usually be to confidently determine that the level of contamination of the land is low relative to some appropriate measure of risk at a particular critical connection.

Publications forming part of the guidance include the CLEA Model and toxicological reports collectively referred to as the CLEA Guidance. The CLEA Guidance has included a number of publications which have provided initial screening values or Generic Assessment Criteria (GACs) for soils contamination based on standard land uses and soil assumptions. The critical concentrations referred to above can be the relevant GAC.

CLEA guidance has gone through a number of revisions over time. Tier 1 generic S4UL values (or GACs) have been published using the CLEA 1.06 Model by CIEH/LQM. These are the third set of generic assessment criteria generated by CIEH and replace the previous two sets of GACs. The revised S4UL values are based on greater knowledge of relevant toxicology and further consideration of exposure frequencies.

C4SL values for six determinands including lead were published by DEFRA/CL:AIRE in December 2014. Additional determinands were added in 2021. They represent a low risk as opposed to minimal risk, however they are still strongly precautionary. These screening values were published by DEFRA for Part 2A use, although DEFRA have also confirmed acceptability for use under planning. However, S4ULs remain the first reference point for BSL due to the broader range of end uses scenarios and the availability of a wide array of determinands with various soil organic contents.

As part of Tier 1 assessments, the following data sources are used in the order of preference given below, unless further justification is provided to adopt less conservative criteria:

-  CIEH S4UL values (derived by CIEH/LQM).
-  DEFRA/CL:AIRE C4SL's <https://www.claire.co.uk/projects-and-initiatives/category-4-screening-levels>
-  CL:AIRE GAC values.
-  Guidance from other European countries.
-  Guidance from the outside Europe.

Dependent on requirements, test results may be divided into representative data sets for assessment against the above referenced screening criteria, based on the conceptual model and taking into account such characteristics as variation in soil properties, historical, existing or proposed land uses. The soils in these areas are considered likely to form the ground cover in critical receptor areas (e.g. gardens, soft landscaping etc)

where pathways may exist. The critical part of the soil column is typically taken as the upper metre in terms of contact with end users of a development site for the purposes of initial assessment.

The screening criteria adopted by BSL are presented overleaf.

Further Assessment

When screening values are exceeded then further consideration is required. This could include further additional detailed investigation and assessment to further define the risk or to design appropriate remedial measures to either remove the source or break the pathway. In some cases, dependant on the Conceptual Site Model (CSM), no action may be required.

PAHs and B(a)P as a Surrogate Marker for Adoption of C4SLs

As stated above, S4ULs remain the first reference point as screening levels unless further justification is provided. In order to determine if the C4SL can be adopted, benzo(a)pyrene (B(a)P), the following guidance within SP1010 Appendix E for B(a)P and Public Health England (PHE) may be adopted with our assessments where appropriate.

Guidance states that benzo(a)pyrene is considered to be one of the most potent PAHs, and it would be appropriate to assume the cancer risk in a mixture is proportional to the concentration of a surrogate marker PAH (benzo(a)pyrene) in the mixture. The ratio of PAHs within the mixture can be assessed to ensure that the profile is similar to that seen for the test material (coal tar mixtures) in the toxicological study by Culp et al. The International Programme on Chemical Safety (IPCS) considered that the PAH profile of the soil sample may deviate from the average profile by about an order of magnitude (up or down).

A more recent study by Bull et al (2013) which analysed PAH concentrations in soil samples from 274 sites, showed that the levels of PAH relative to B(a)P showed little variability and were similar to that recorded for the coal tar mix used in the Culp et al study. Given this, it was concluded that benzo(a)pyrene is a suitable surrogate marker to represent mixtures of PAH in soil.

In order to risk assess the PAH mixture for site specific soil samples using human health guideline values, notably the C4SLs, as detailed in SP10101 the ratio of the seven genotoxic PAHs as shown below, relative to B(a)P, should be calculated to ensure it is similar to the test material used in the Culp study (PHE 2010). To be considered sufficiently similar, the ratio relative to B(a)P should fit within the upper and lower limits (representing an order of magnitude above and below the mean ratio to B(a)P of test material used in the Culp et al study). In such cases B(a)P is considered an adequate surrogate marker and the Low Level of Toxicological concern (LLTC) for B(a)P (i.e., the C4SL) may be used in the risk assessment.

Statistical Analysis on Soils

Guidance on the use of statistics is taken from the CL:AIRE publication “Comparing Soil Contamination Data with a Critical Concentration” 2020, the basis of which in statistics is termed Central Limit Theorem (CLT), which says “*The distribution of sample means converges to a normal distribution as the sample size increases*”.

If the critical concentrations have been exceeded, as part of a further assessment, statistical analysis may be undertaken on a dataset to demonstrate that the mean concentration on the site (or a particular area) is actually below the critical concentration. The true mean concentration of a contaminant is never known because all the site soil has not been tested. An estimation of the true mean can be obtained from the samples tested during the investigation. The greater the number of samples tested, the closer the mean of these values is to the true mean.

As discussed above, test results are typically divided into representative data sets for assessment and may be referred to as ‘averaging areas’ to which statistics can be applied, although several statements need to be satisfied before applying the guidance:

-  Averaging areas have been defined based on the CSM.
-  Sample locations – random/grid sampling adopted as opposed to targeted investigation.
-  Samples are evenly spread and not clustered.

-  Analysis do not suggest a hotspot/outlier or cluster established by histogram or other means.
-  Samples are of same/similar depth and taken from one population (e.g. just topsoil).
-  Analyses do not show a spatial trend or other spatial pattern across that zone.
-  The number of samples has been shown to be sufficient for statistical analysis.

Once the above have been satisfied, when undertaking statistical analysis, the question “*are mean soil concentrations within the averaging area equal to, or greater than, the GAC?*” is being asked. Typically, outliers or “hotspots” are treated as separate zones or averaging areas. The sampling strategy and assessment should also take into account uncertainty (for example, spatial heterogeneity) in contaminant concentrations. There is the assumption that sampling was random or stratified and systematic (e.g. on a grid) and not targeted at specific sources; data from such targeted areas should be omitted from the statistical analysis. Data should be from one population (i.e. the same materials).

The statistical test that is carried out is used to demonstrate that there is a certain probability that the true mean falls below the critical concentration (typically the GAC in a screening exercise). The main tool used to draw conclusions based on the 2020 guidance is a comparison of a 2-way confidence interval with the critical concentration. A confidence interval consists of two sets of numbers; an interval i.e. a range of values plus a pre-determined level of confidence e.g. 80%. A common interpretation of a confidence interval of say 80% is that “*there is an 80% chance that the true mean concentration level of the contaminant in a sampling zone lies between X concentration and Y concentration*”.

The current guidance for planning says that the site has to be “safe” which suggests we should use a large confidence interval such as 95% or higher to make a decision. This means that there is a 95% chance of the true mean concentration lying in this interval, there is also a 5% chance it lies outside this interval. One could then conclude that the requirements of planning have been met if the 95% confidence interval lies below the critical concentration.

The guidance recommends that at least two confidence levels are used such as 90% and 99% or 80% and 95%. By using two differing confidence intervals, we can use the smaller confidence interval (e.g. 80% confidence interval) to say “*we think the mean is most likely to be inside this range*” and the larger confidence interval (e.g. 95% confidence interval) to say “*we think the mean is most unlikely to be outside this range*”.

If the confidence interval extends to above the critical concentration, then further action may be required.

Controlled Waters

The European Water Framework Directive (WFD) became UK law in December 2003. It was created to ensure that European countries manage their rivers, groundwater and lakes so that they stay healthy for people and for wildlife.

This is achieved by the use of chemical standards (Water Quality Targets – WQTs) for surface waters and groundwater. These values describe concentrations of chemicals that are not expected to cause harm to environmental organisms or human health, provided they are not exceeded. The same chemical may have several standards for different environmental regimes, and for different protection objectives.

Statutory Standards are set in legislation and if exceeded, this constitutes non-compliance with statutory obligations. European Directives are implemented in England and Wales by corresponding statutory instruments (i.e. regulations- The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 and The Private Water Supplies (England) Regulations 2016. SI 2016 / 618). In Scotland, the Public Water Supplies (Scotland) Regulations 2014 apply. The statutory instruments can be the exact same standards as they appear in the Directive or be more stringent.

A number of non-statutory standards also exist, these are set by various organisations (including the EA) for chemicals that are considered to be of concern, but are not covered by any specific legislation.

The chemical standards used in the UK to control impact of contamination on controlled waters are Environmental Quality Standards (EQS). These cover a large number of compounds. EQS are available for inland surface waters (freshwater) and other surface waters (transitional and marine).

Several EQS are based on bioavailable metal proportions (i.e. copper, lead, manganese, nickel and zinc). A software tool (M-BAT) is available from the Water Framework Directive - UK TAG website for calculating the bioavailable fraction. Where this tool has been used, the bioavailability has been taken into account by calculating site-specific $PNEC_{dissolved}$ (Predicted No Effect Concentration) values. These enable the dissolved concentration data to be compared with the PNEC as if it were an EQS.

UK Drinking Water Standards (DWS) apply to waters abstracted for human consumption. Where no UK or EU drinking water standard exists, reference is made to the World Health Organisation criteria (2011).

The DWS apply to groundwater or to surface water used for abstraction and the EQS apply to surface water where the aquatic ecosystem is the receptor. Where the most appropriate water quality target cannot be determined with certainty, the lowest one is adopted in line with the precautionary principle.

In some instances, the laboratory detection limits (LODs) may be greater than the water quality target it is being screened against, but it should be noted that these comparisons are an initial screening assessment. It may be the case that lower LODs could be obtained using a more specialised technique, but it would be disproportionately expensive to adopt the more costly specialist technique for initial screening exercises.

The preference of BSL is to have testing carried out on actual samples of ground/surface water rather than theoretical values obtained from leachate testing, which is considered to often be highly conservative. Data from water samples obtained or from leachate analysis is then compared against the screening criteria adopted by BSL, which are presented overleaf.

When screening values are exceeded then further consideration is required. This could include further additional detailed investigation and detailed quantitative risk assessment (DQRA) to further define the risk or to design appropriate remedial measures to either remove the source or break the pathway.

Ground Gas Risk Assessment

BS8485:2015+A1:2019, BS 8576:2013, CL:AIRE RB17, and NHBC 'Hazardous Ground Gas - An essential guide for housebuilders' 2023, are the current guidance which gives up-to-date advice on all aspects of permanent ground gas risk. BS8576 alongside CIRIA C682 also provides guidance on assessment of hydrocarbon vapour intrusion.

The CL:AIRE publication 'Good Practice for Coal Mine Gas Emissions' 2021 provides guidance on the assessment of risks from mine gas sources.

The above all outline good practice in investigation, the collection of relevant data and monitoring programmes in a risk-based approach to ground gas contamination. The aim of the guidance is for a consistent approach to decision making, particularly relating to the scope of protective design measures on a site-specific basis.

Legislative Framework

BS8485:2015+A1:2019, BS 8576:2013 and CIRIA C665 provides technical guidance, however they also recognise the context into which the guidance has to be employed. Government policy is based upon a "suitable for use approach", which is relevant to both the current and proposed future use of land. When considering the current use of land, Part IIA of the Environment Protection Act 1990 provides the regulatory regime. The presence of hazardous ground gases could provide the "source" in a "pollutant linkage" which could lead the regulator to determine that considerable harm or there is a significant possibility of such harm being caused. Under such circumstances, the regulator would determine the land to be "contaminated land" under the provisions of the Act, setting out the process of remediation as described in the DETR Circular 02/2000 *Statutory guidance on contaminated land*.

Generation Potential of Sources

BS 8576:2013 Figure 6 provides a basis for assessing the generation potential from sources identified as part of the Phase I Assessment. These are summarised below:

Generation Potential	Typical Sources
Very Low	- Natural carbonate soil and strata, e.g. chalk and limestone. - Natural soil strata with a low degradable organic content, e.g. alluvium, peat. - In-filled pond less than 15 m diameter, in-filled before 1930s to 1940s. - Made ground with low degradable organic content (e.g. up to 5% organic material such as pieces of wood, pieces of paper, rags, etc. with a high proportion of ash and no food or other easily degradable waste). - Mine workings shallow or shaft (where there is clear evidence that they are flooded). - Inert landfill sites (and pre -1945 landfills).
Low	- Natural soil strata with a high degradable organic content (DOC). - Made ground with total organic carbon (TOC) up to 6% (e.g. dock silt, no food or other easily degradable waste). - Foundry sand (includes phenolic binders, rags and wood that decay, albeit at low rates). - Landfill 1945 to mid 1960s (see also Moderate below).
Moderate	- Sewage sludge. - Mine workings – unflooded, more than 50 years since last worked (gas is liberated from coal when mine workings are excavated; this continues for up to about 50 years). - Landfill 1945 to mid 1960s (this could also be “low” or, if disturbed, “high”).
High	- Landfill mid 1960s to early 1990s. - Mine workings – unflooded – less than 50 years since last worked.
Very High	- Municipal landfill sites. - Landfill early 1990s onward.

Frequency and Duration of Monitoring

BS8576 notes to determine where and how to monitor ground gases requires consideration of credible pathways of possible exposure of the receptors, taking into account what is known about the geology and hydrogeology, building construction and services layout, foreseeable events such as flooding, changes in groundwater level, climate change, extreme weather conditions, the closure of mines, and possible changes to the gas regime caused by future development.

The monitoring period for a specific site should cover the “worst case” scenario. A “worst case” scenario will typically occur during falling atmospheric pressure and, in particular, weather conditions such as rainfall, frost and dry weather.

The benefits of additional information and whether it is likely to change the scope of gas protection should be considered, as are the consequences of failing to characterise adequately pollutant linkages. Investigations concerned with ground gas are required to provide monitoring data sufficient to allow prediction of worst case conditions enabling the confident assessment of risk and subsequent design of appropriate gas protection schemes. Monitoring programmes should not be an academic exercise in data collection. CL:AIRE publication TB17 “Ground Gas Monitoring and ‘Worst-Case’ Conditions” provides further guidance.

Below are matrices that will aid in determining an appropriate number of gas monitoring visits and the length of monitoring period.

Typical/idealised periods of monitoring

		Generation of Potential Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of Development	Low (Commercial)	1 month	2 months	3 months	6 months	12 months
	Moderate (Apartments)	2 months	3 months	6 months	12 months	24 months
	High (Low rise Residential)	3 months	6 months	6 months	12 months	24 months

Typical/idealised frequency of monitoring/Number of Visits Required

		Gas Generation of Potential Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of Development	Low (Commercial)	4	6	6	12	12
	Moderate (Apartments)	6	6	9	12	24
	High (Low rise Residential)	6	9	12	24	24

Notes

- 1 Generation potential of sources based on descriptions within BS 8576:2013.
- 2 At least two sets of readings should be at low and falling atmospheric pressure (but not restricted to periods below <1000 mb) known as worst case conditions. Historical data can be used as part of the data set (Table 5.5b).

It is recommended that newly installed monitoring wells are left for 24 hours to allow the soil gas to reach equilibrium. It should be recognised, however, that some soil gas regimes could take considerably longer (up to seven days). Interpretation of any initial readings should take this equilibrium process into account.

Gas Risk Assessment

Within BS8485:2015+A1:2019 a semi-quantitative method is set out for the assessment of risk.

This method (Modified Wilson and Card) uses the concept of Gas Screening Values (GSVs) and typical threshold concentrations of carbon dioxide and methane to identify levels of risk. Sites are then classified into a 'Characteristic Situation' or 'CS' from CS1 where no mitigation is required and CS2 increasing up to CS6 where protection measures are required.

The NHBC guide 'Hazardous Ground Gas - An essential guide for housebuilders' 2023 provides further assessment tools for ground gas monitoring data, including the use of ternary plots to determine ground gas sources.

A separate approach to assessment without monitoring data is discussed under the RB17 header further below.

CIRIA C682 and BS 8576:2013 provide guidance on assessment of VOC intrusion risk.

Ground Gas Mitigation

Where a risk is determined to be present by assessment, BS8485:2015+A1:2019 provides guidance for the design of protection systems based on a points scoring system depending on the characteristic situation, structure type, structural barrier types, ventilation and a gas resistant membrane. Source removal can also be considered.

The design requires the structures to be categorised into one of four building types: Type A, Type B, Type C or Type D, related to the construction and end use of the building, together with the control of future structural changes and maintenance.

CIRIA C748 provides advice on the use of membranes as VOC vapour barriers.

CIRIA C735 sets out the approach for verification of installed mitigation measures. Note that if a membrane is installed it must be verified in accordance with CIRIA C735 or it will score zero points and assumed to not afford any protection.

RB17 Approach

CL:AIRE RB17 (Card et al 2012) is a pragmatic approach to ground gas risk assessment and was developed because gas concentration, pressure and flow rate measured in a well headspace may not be representative of the conditions in the surrounding formation.

In these low-risk situations, the approach is to use the conceptual site model and the estimation of the likely gas generation from a source to identify where or if gas monitoring is required to better define the risks.

Under this approach, for sites with natural soils only with no credible methane source, then no action is required (no monitoring or gas protection measures) as this represents Characteristic Situation 1 (CS1).

Radon

Advice on radon protection in England is provided by the UK Health Security Agency, <https://www.ukradon.org/information/ukmaps> and by the BRE (BR 211 (Scivyer 2023)).

Areas of the country can be categorised according to the percentage of existing homes where radon is present above the Action Level:

-  0-1% lower probability.
-  1-3% and 3-10% intermediate probability.
-  >10% higher probability.

Basic radon protection measures are required in new buildings and extensions in areas of England and Wales where 3-10% of properties exceed the Action Level and full radon protection measures where >10% exceed the Action Level.

Unexploded Ordnance (UXO) Guidance

Clients have a legal duty under the CDM 2015 Regulations to provide designers and contractors with project-specific health and safety information needed to identify hazards and risks. This includes the possibility of unexploded ordnance (UXO) being encountered on the site. Further details are given in CIRIA report C681.

BSL carry out non-specialist UXO screening exercises by considering any evidence of UK defence activities on or near the site evident from gathered desk study information and the unexploded aerial delivered bomb (UXB) online risk maps produced by Zetica. Other data sources are available, but as a first stage screening exercise the freely available online Zetica maps have been used. The level of risk stated is that determined by Zetica, a company experienced and considered competent in the assessment of UXO.

Geotechnical Guidance

A preliminary risk assessment of geotechnical hazards is carried out at the desk study stage and confirmed (or amended) at the ground investigation stage.

The CD 622 'Managing Geotechnical Risk' guidance document defines the technical approval and certification procedures to be used to ensure that the risk associated with the geotechnical activities are appropriately managed.

The desk-based stage may also include the requirements for a Coal Mining Risk Assessment (CMRA) which specifically assesses the risks from mining induced instability and related issues in high risk development areas: <https://www.gov.uk/guidance/planning-applications-coal-mining-risk-assessments>.

In order to establish the requirements of a project, the Geotechnical Category which is based on a consideration of project complexity, proposed geotechnical activities, presence of geo-hazards and severity of geotechnical risks, shall also be considered. These range from Category 1 (small/simple structures) to Category 3 (very large, unusual or complex activities/structures, such as tunnels). It is envisaged most projects typically fall into Category 2, including conventional types of geotechnical structures, earthworks and activities.

In the case of the geotechnical hazard identification at the intrusive investigation stage, this is referred to as the **ground model**.

The geotechnical sections of the report contain the factual information on the geology and relevant site data, including both in situ and laboratory testing, with a geotechnical evaluation of the information stating the assumptions made in the interpretation of the data.

Derived values of geotechnical parameters are obtained from test results by theory (book values), correlation or empiricism in general accordance with BS EN 1997-2:2007 (EC7).

Where derived geotechnical parameters are to be used in designs in accordance with EC7, the selection of characteristic values for geotechnical parameters using the derived values is carried out by well-established experience.

The characteristic value is a cautious estimate of the value affecting the occurrence of the limit state. For any particular material type there may be more than one characteristic value for each parameter because there may be more than one limit state.

The second stage is the selection of design values. The design values are either derived from the characteristic value by applying the relevant partial factors or assessed directly. Similarly, there can be several design values for the same material type.

In the event that geotechnical designs are included in this report, selection of the characteristic and design values is included. Otherwise, it is the duty of the geotechnical designer to determine these within a separate design report (a GDR).

Where it has not been possible to reasonably use an EC7 compliant technique, a practical alternative has been adopted to obtain indicative soil parameters and any interpretation is based upon engineering experience, local precedent where applicable and relevant published information.

In addition to the above:

-  Assessments for highways designs are based on CD 622 Managing Geotechnical Risk.
-  The assessment of sustainable drainage is based on BRE365 and CIRIA C753 'The SuDS Manual'.
-  Earthworks Assessments are based on SHW Series 600 and BS6031.
-  Risks from mining (both at the desk based and intrusive stages) are assessed adopting guidance from CIRIA C758.

Re-Use of Waste Soils Guidance

Definition of Waste

The Environment Agency considers waste to be “...any material that is discarded, or intended to be discarded...” this includes any soil from drainage trenches, foundation arisings, site strips etc. It is no longer required in its original location, therefore it is considered to be waste. Without an appropriate materials management plan, permit or exemption in place, by law this material is defined as “illegally deposited waste”.

Landfill tax rules allow HM Revenue & Customs (HMRC) to recover landfill tax on illegally deposited waste on construction sites. This could lead to excessive costs without the correct documentation in place. In addition, a

person who makes, knowingly causes or knowingly facilitates a disposal to be made at an unauthorised site is also liable to pay Landfill Tax.

CL:AIRE: Code of Practice

Where materials are excavated for construction purposes, wherever possible these should be retained on site for engineering purposes if they are suitable for use. This can be implemented under the CL:AIRE “Development Industry Code of Practice for the Definition of Waste” (CL:AIRE DoWCoP), also commonly referred to as a “Materials Management Plan”.

<https://www.claire.co.uk/projects-and-initiatives/dow-cop>

Developers and contractors are advised to complete all works under the DoWCoP where applicable.

To implement the DoWCoP (for Route A), there is a requirement to notify the Environment Agency and Local Authority of the intention to use the code of practice in principle, after which there is a 21-day notice period for their response.

In order to re-use soils under the DoWCoP, there are four key criteria that need to be met:

-  The aims and objectives of the project meet the requirements of the Waste Framework Directive (does not harm human health or the environment).
-  The soils can be demonstrated to be suitable for use (backed up by chemical/geotechnical testing and assessment).
-  There is certainty of use (planning consents are in place alongside materials tracking, which should be in place as part of good site practice in any case).
-  Quantity (the quantity of materials used should be known).

Potential scenarios where soils may be able to be re-used:

-  Material capable of being used in another place on the same site without treatment.
-  Material capable of being used in another place on the same site following ex-situ treatment on site.
-  Material capable of being used in another development site without treatment (Direct Transfer).
-  Material capable of being used in another development site following ex-situ treatment on another site e.g. Hub site.

In order to satisfy these requirements, the following are required:

- i) Consultation/approval with Local Authority & Environment Agency to confirm they have no objections to the proposed re-use of waste soils, or the risk assessments for the site.
- ii) Risk Assessments to demonstrate that the site does not present an Environmental Hazard.
- iii) Remediation Strategy for contaminated sites (or Design Statement for non-contaminated sites).
- iv) Materials Management Plan (MMP) which details material generated stockpiles and the end use.
- v) Volume calculations.
- vi) Planning permission for the development.
- vii) Contractual details to be clear, regarding who steps in if a contractor goes into administration/liquidation.

The use of the CoP is effectively industry regulated, there is a requirement to appoint an independent Qualified Person (QP) who checks all the requirements have been met and registers the documentation with the Environment Agency. This person must not have had any involvement with the preparing of the risk assessments or remedial strategy on the site.

Soils which require treatment on site (e.g. bioremediation, stabilisation etc) may require an Environmental Permit for treatment, together with justification and validation to prove, once treated, this material is suitable for use.

Construction activities carried out on uncontaminated soils solely for the purpose of improving geotechnical properties are not generally regarded as waste treatment operations and do not require a permit.

Site management procedures need to be in place to ensure that material is tracked through from excavation stockpiling, treatment and remediation processes. Should the process of material tracking be considered non-robust, or not adhered to, this may fail the test whether excavated materials may be considered non-waste.

Any declared MMP should be amended as new import sources are added.

Regardless of implementing re-use under the code of practice or not, all sites should have some form of materials tracking in place in compliance with current legislation. Any re-use scheme should also be designed to minimise disposal costs. Note that for re-use of landfilled materials or mining wastes, the DoWCoP may not apply and a Waste Recovery Permit (or others) may be required. Liaison with the Environment Agency would be needed on a case by case basis to determine the best option.

Once the project is complete, a verification report detailing soils re-use/import will need to be produced and submitted to CL:AIRE, which may be subject to a random audit process. Sites found to be non-complaint with the CoP can be referred to the EA for further investigation.

Soils Re-use under Exemptions and Permits

Other potential options to allow the re-use and/or import of soils and aggregates on site are provided in the table below. Applies to England/Wales only – Scotland differs.

Re-use Mechanism	Description
U1 Exemption	Can be applied to re-use/import of soils and stones, but only up to 1000 tonnes or for brick and concrete up to 5000 tonnes. This is usually an efficient way to re-use small volumes of waste materials. However, only one U1 can be filled in per site in any 3-year period. Quick and free via online registration.
WRAP Quality Protocols	Describes how processed demolition arisings can be removed from regulatory waste regime. Requires a demonstration of appropriateness by: • Factory Production Control Manual. • Facility Permit (or Exemption). • Grading Analysis.
Waste Framework Directive (WFD) exclusion	In regard to “clean” naturally occurring soils only that are to be re-used on their site of origin, these are covered by a Waste Framework Directive (WFD) exclusion which is an EA regulatory position statement. So long as the project can prove the four criteria listed above for the DoWCoP, then permits or the DoWCoP are not required. However, many projects still use the CoP to ensure compliance.
T5 Screening and blending of waste	The T5 exemption allows you to temporarily treat waste on a small scale to produce aggregate or soil at a particular location, such as a construction or demolition site. The limit is 5,000 tonnes. This applies to: • Screening soil on a demolition site to remove wood and rubble. • Blending soil and compost that has been produced under an exemption on a construction site to produce better soil for landscaping on that site (e.g. peaty deposits). • Crushing waste (except bricks, tiles and concrete) before screening or blending • Grading waste concrete after it has been crushed to produce a certain type of aggregate.
T7 Exemption	The T7 allows treatment of waste bricks, tiles and concrete by crushing, grinding or reducing in size. This needs to be registered with the Local Authority.
Other Permitting Routes	Other options include use under an Environmental Permit (Standard or Bespoke Rules), however these may be a time consuming and costly route, where use of the other above options (if applicable) are likely to be more feasible in construction.

There are also potential non-enforcement positions for re-use e.g. a site has a large volume waste illegally deposited on it (not by landowner). The new owner is keen to re-use waste where possible to reprofile the site (planning condition granted). The DoWCoP could not be used as materials already excavated and deposited as a waste (illegally). The EA may agree that although the DoWCoP not applicable, they would take a non-enforcement position if the works were completed in accordance with the DoWCoP – this would need to be agreed in advance.

Waste Classification and Disposal Guidance for Soils

Introduction

As described in the 'Waste Duty of Care Code of Practice (2016)' any substance or object that the holder discards, intends to discard or is required to discard is a waste. Waste producers have a duty of care to classify the waste they are producing:

-  Before it is collected, disposed of or recovered.
-  To identify the controls that apply to the movement of the waste.
-  To complete waste documents and records.
-  To identify suitably authorised waste management options.
-  To prevent harm to people and the environment.

The most sustainable and economic method of dealing with waste soil is usually the retention and re-use on site. Where this is not possible there are three main options for the disposal of soils:

1. Disposal to a permitted waste recycling facility.
2. Re-use on another site (subject to the suitability).
3. Disposal to a landfill site.

The disposal to a permitted facility will be subject to the **specific conditions of the permits for each individual facility** and will vary dependent on location and environmental sensitivity of the receiving site. Re-use on another site will also be subject to the acceptability criteria of that site.

The guidance below relates to disposal to **landfill sites only**.

Background for Landfill Disposal

The Landfill Directive places controls on waste disposal. These controls include requirements to follow the waste acceptance procedures and criteria that have been agreed by the Council of the European Union and are laid out in Council Decision 2003/33/EC.

Before a waste can be accepted at a landfill site, the landfill **operator** must be satisfied that the waste meets permit conditions, the waste acceptance procedures (WAP) and waste acceptance criteria (WAC).

If disposal to landfill is the best management option for the waste soils, these procedures **must** be followed or the operator may refuse to accept the waste.

Key Points:

-  Not all waste can be landfilled.
-  Landfills are classified according to whether they can accept hazardous, non-hazardous or inert wastes.
-  Wastes can only be accepted at a landfill if they meet the waste acceptance criteria (WAC) for that class of landfill.
-  Most wastes must be treated before you can send them to landfill.
-  There are formal processes for identifying and checking wastes that must be followed before wastes can be accepted at a landfill site.

Classification

Wastes are listed in the European Waste Catalogue and grouped according to generic industry, process or waste types. Wastes within the EWC are either hazardous or non-hazardous. Some of these wastes are hazardous without further assessment (absolute entries) or are 'mirror' entries that require further assessment of their hazardous properties in order to determine whether they are hazardous waste.

Waste soil has mirror entries on the EWC and as such the first phase of the waste classification process is that of determining if the waste is hazardous or not i.e. the hazard assessment. The most common EWC waste codes related to soil are:

17 05	Soil (including excavated soil from contaminated sites), stones and dredging spoil
17 05 03*	soil and stones containing dangerous substances
17 05 04	soil and stones other than those mentioned in 17 05 03

Soils may contain certain contaminants (e.g. asbestos, oil,) which have prescribed concentration thresholds, that if breached will render the material hazardous waste. These are based on specific "hazardous properties" which include hazards such as carcinogenicity, flammability and toxicity.

In the first instance the concentrations of plausible contaminants within the soil should be identified and wastes should be **classified based on their total concentrations** and classified as either hazardous or non-hazardous waste. WAC analysis must not be used for waste classification.

Waste Definitions

Inert	- Will not undergo any significant physical, chemical or biological transformations. - Will not dissolve. - Will not burn. - Will not physically or chemically react. - Will not biodegrade. - Will not adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm to human health. - Has insignificant total leachability and pollutant content. - Produces a leachate with an ecotoxicity that is insignificant (if it produces leachate).
Non-Hazardous	Is not inert (see above). Is not hazardous (see below).
Hazardous	Soil has hazardous properties as defined in WM3 (Guidance on the classification and assessment of waste (1st edition 2015)- Technical Guidance).
Stable Non-reactive hazardous waste#	Hazardous waste, the leaching behaviour of which will not change adversely in the long-term, under landfill design conditions or foreseeable accidents either: in the waste alone (for example, by biodegradation), under the impact of long-term ambient conditions (for example, water, air, temperature or mechanical constraints) or by the impact of other wastes (including waste products such as leachate and gas).

This option allows hazardous waste that is stable and thus has a low leaching potential to be deposited in cells with a standard of containment consistent with non-hazardous wastes.

WAC Testing

The purpose of WAC analysis is to confirm that the waste complies with the relevant WAC for the receiving landfill. If the waste has any disposal route other than a landfill site (e.g. recycling facility, incineration etc) then WAC is not relevant. Furthermore, the WAC limits **cannot** be used to make an assessment of whether a waste is hazardous. WAC testing does however define if a non-hazardous waste is suitable for an inert landfill.

Classification based on Total Concentrations ¹	Non-Hazardous Waste		Hazardous Waste	
	Below inert WAC limit values:	Above inert WAC limit values:	Below hazardous WAC limit values	> WAC limit values
WAC testing				

Landfill requirements	INERT landfill	NON-HAZARDOUS landfill ²	HAZARDOUS landfill	PRE-TREATMENT ³
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- 1 Total concentrations are defined as tests results on solids as opposed to leachate (i.e. a liquid).
- 2 Individual sites may have certain limit values pre-determined in their licence.
- 3 After pre-treatment the material characteristics may have changed to an extent that allow the soil to be re-classified.
- 4 Possibility that wastes could be classified as stable Nonreactive HAZARDOUS waste in non-hazardous Landfill (e.g. soils containing low concentrations of asbestos, gypsum or sulphate bearing soils).

Waste classified as non-hazardous can be accepted into a non-hazardous landfill without having to pass any numerical WAC.

Soils above hazardous WAC limit values require pre-treatment prior to disposal. The effective pre-treatment, typically involving separation, sorting and screening, can offer cost savings through reducing the hazardous nature and volumes of soil. Costs for disposal of non-hazardous/hazardous soils are significant compared to the disposal of inert material.

Greenfield Sites and Inert Waste

The possibility of automatic inert classification naturally occurring “clean” soils should be explored in accordance with the requirements of paragraph 10 (wastes acceptable without testing at landfills for inert waste) of the Landfill (England and Wales) (Amendment) Regulations (2005). This is the case if:

- They are single stream waste of a single waste type (although different waste types from the list may be accepted together if they are from a single source); and
- There is no suspicion of material or substances such as metals, asbestos, plastics, chemicals, etc to an extent which increases the risk associated with the waste sufficiently to justify contamination and they do not contain other classes of landfill (e.g. the waste producer can characterise the waste based on visual assessment and written description with supporting evidence such as a desk study, subject to agreement by the landfill operator).

Hydrocarbons in Soils

WM3 uses the term Oil or Waste Oil to cover hydrocarbons products such as fuel oil, petrol or diesel. These are defined by WM3 as hazardous under an absolute entry in the List of Wastes. However, hydrocarbons in soils are a mixture rather than a pure product and are therefore not absolute entries.

Known Oils

The simplest scenario is where the identity of the contaminating oil is known or can be identified. If the oil is known the manufacturer’s or supplier’s REACH compliant safety data sheet for the specific oil can be obtained and the hazard statement codes on that Safety Data Sheet can be used for the hazardous waste assessment.

Where the identity of the oil can only be identified down to a petroleum group level (i.e. the contaminating oil is known to be diesel, but the specific type/brand is unknown), then the classification of that petroleum group should be used in the assessment. The marker compounds associated with that petroleum group may be used to confirm carcinogenicity.

Oils may contain a range of hydrocarbons, so the presence of for instance Diesel Range Organics (DRO) does not enable the assessor to conclude that diesel is present. These hydrocarbons may have arisen from other oils, the laboratory needs to provide an interpretation of the chromatograph to determine if it is consistent with diesel or weathered diesel as a whole.

The concentration of known oils should be determined using a method that as a minimum spans the range in which the carbon numbers for that known oil fall.

Unknown Oils

Where hydrocarbons are contaminating soils, it is likely that the oil will be unknown or cannot be determined.

WM3 states that:

For contaminated land specific consideration must be given to the following before proceeding:

- The presence of other organic contaminants, for example solvents or coal tar that could be detected as hydrocarbons. Coal Tar is not an oil and is considered separately in WM3 example 2. Where the site history or investigation indicates the presence of hydrocarbons from oil and other sources (e.g. coal tar), and the origin of the hydrocarbons cannot reliably be assigned to either, then a worst case approach of considering the hydrocarbons both as waste oil (in accordance with this example) and from other sources, for example coal tar should be taken.
- The presence of diesel, or weathered diesel, should be specifically considered by the laboratory and where this is confirmed by the hydrocarbon profile the oil should be assessed as a known or identified oil (diesel).

The use of marker compounds is optional; however, it is recommended that where possible the marker compounds should be used. WM3 states:

If the identity of the oil is unknown, and the petroleum group cannot be established, then the oil contaminating the waste can be classified as non-carcinogenic/mutagenic due to the presence of oil if all three of the following criteria are met:

- The waste contains benzo[a]pyrene (BaP) at a concentration of less than 0.01% (1/10,000th) of the TPH concentration (This is the carcinogenic limit specified in table 3.1 of the CLP for BaP)
- This has been determined by an appropriate and representative sampling approach in accordance with the principles set out in Appendix D of WM3, and
- The analysis clearly demonstrates, for example by carbon bands or chromatograph, and the laboratory has reasonably concluded that the hydrocarbons present have not arisen from petrol or diesel.

For example:

TPH Concentration (mg/kg)	Petrol or Diesel	BaP (mg/kg)	Classification
10,000	No	0.9	Non- Hazardous
1,000	No	Not available	Hazardous
1,000	Yes	Not relevant	Hazardous

References

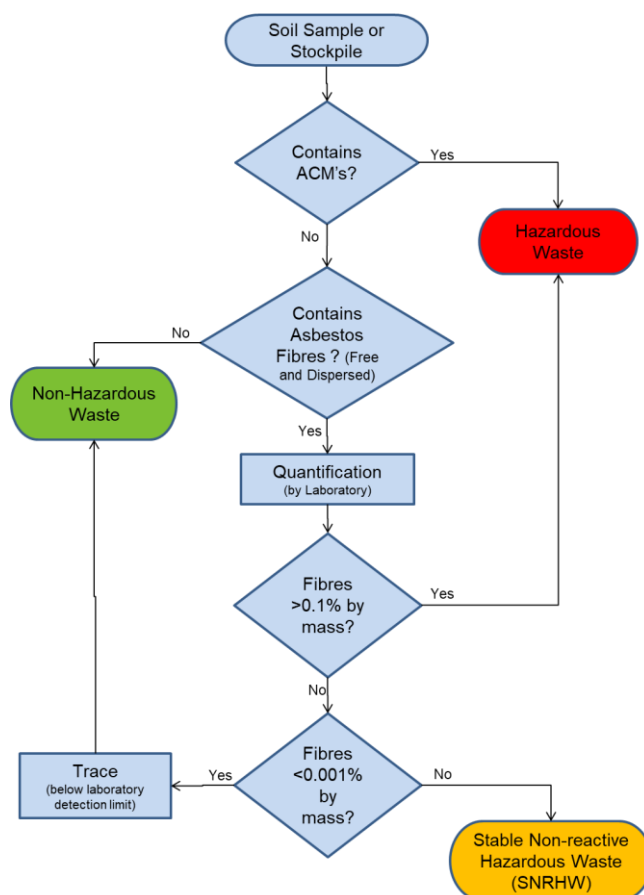
1. Environmental Permitting (England and Wales) Regulations 2010 (as amended) (EP Regulations), the Landfill Directive (1999/31/EC) and the subsequent Council Decisions.
2. Environment Agency Environmental Permitting Regulations: "Inert Waste Guidance- Standards and Measures for the Deposit of Inert Waste on Land" 2009.
3. Environment Agency "Waste acceptance at landfills - Guidance on waste acceptance procedures and criteria" Nov 2010.
4. Environment Agency "Guidance on the classification and assessment of waste (Technical Guidance WM3)".
5. Classification, Labelling and Packaging of Substances Regulation (EC 1272/2008) (CLP).
6. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.
7. 2014/955/EU: Commission Decision of 18 December 2014 amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament.
8. Environmental Permitting Guidance The Landfill Directive For the Environmental Permitting (England and Wales) Regulations 2010 Updated March 2010 Version 3.1.
9. Classification, Labelling and Packaging of Substances Regulation (EC 1272/2008) (CLP).

Waste Containing Asbestos

The assessment of asbestos containing waste is dependent on whether the asbestos is present as:

- Fibres that are free and dispersed, or
- Identifiable pieces of asbestos containing materials (ACM's).

Identifiable pieces of asbestos are any particle of a size that can be identified as potentially being asbestos by a competent person if examined by the naked eye. The result is that commonly soils with visible ACM's are sorted and the ACM's removed by hand picking and separate disposal.



Should soils contain asbestos, the concentration and type of asbestos identified, in addition to the chemical composition (i.e. hazardous or non-hazardous detailed above), will determine which waste code is applicable to the soils and which landfill will accept it as summarised below:

Waste	Conc. by Weight (%)	EWG 2002 Catalogue Entry Code	Waste Disposal Route
Non-hazardous containing asbestos fibres	<0.001 - <0.1%	17 05 04 (soil and stones other than those mentioned in 17 05 03*)	Non-hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a stable non-reactive hazardous landfill site.
Hazardous containing asbestos fibres	<0.001 - <0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a hazardous landfill site.
Non-hazardous soils containing asbestos fibres	>0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill authorised to receive asbestos, or in a stable non-reactive hazardous waste cell at a non-hazardous landfill authorised to receive asbestos.

Waste	Conc. by Weight (%)	EW C 2002 Catalogue Entry Code	Waste Disposal Route
Non-hazardous Soils containing ACM (Mechanically separable)	>0.1%	17 06 05 (construction material containing asbestos) 17 05 04 (soil and stones other than those mentioned in 17 05 03*)	ACMs disposed of at a hazardous landfill authorised to receive asbestos, or in a stable non-reactive hazardous waste cell at a non-hazardous landfill authorised to receive asbestos. Soils should be disposed of at a non-hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a stable non-reactive hazardous landfill site.
Hazardous soils containing ACM	>0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a hazardous landfill site.

Asbestos concentrations below 0.001% by mass are below standard laboratory detection limits and are not currently regarded as containing asbestos for the purposes of disposal and may be disposed of to an inert landfill site¹. These levels are often termed “trace” by laboratories.

Asbestos concentrations between 0.001% and 0.1% are stable non-reactive hazardous waste (SNRHW)¹. Waste transfer stations where soil recycling takes place may be able to take SNRHW, but are unlikely to take soils containing asbestos above trace concentrations.

The following codes should be assigned to the asbestos waste as appropriate:

17 06	Insulation materials and asbestos-containing construction materials
17 06 01	Insulation materials containing asbestos
17 06 03	Other insulation materials consisting of or containing hazardous substances
17 06 04	Insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05	Construction material containing asbestos

WM3 indicates that 17 06 05 would normally be used in preference to 17 06 01 for the asbestos in asbestos contaminated soil and stones.

Construction materials containing asbestos and “*other suitable materials*” may be landfilled at landfills for non-hazardous waste in accordance with the Landfill Directive without testing.

This means that wastes that are only hazardous because of their asbestos content can be disposed of at landfills for non-hazardous waste in separate landfill cells that only accept asbestos wastes and other suitable materials. The Landfill Directive requires that stable non-reactive hazardous waste shall not be deposited with biodegradable waste (for example organic material, household waste, paper etc..) and must meet the waste acceptance criteria set out in accordance with Annex II.

Construction

Health and Safety Executive (HSE) guidance on asbestos is not directly related to soil and much of the guidance focuses on the removal of asbestos from buildings. The overarching legislation is the Control of Asbestos Regulation (CAR 2012). However, where work involves (or is likely to involve) contact with asbestos then CAR 2012 requires a risk assessment including whether the work is licensed or notifiable non-licensed work and may require an Asbestos Management Plan. Work becomes notifiable if it is considered that the control limit could be exceeded.

Brownfield sites frequently have soils that contain asbestos and the presence of asbestos needs to be considered within the context of construction, particularly in relation to groundworks. The exposure of soils and the use of excavators and plant to move soil around increases the possibility of fibres becoming airborne. However, it is good site practice to not generate dusts and to employ dust suppression on all sites regardless of the presence of asbestos.

The legal control limit for asbestos is 0.1f/ml over a continuous four-hour period. The control limit is not a 'safe' level and exposure from work activities involving asbestos must be reduced to as far below the control limit as possible.

Clearly the higher the concentrations in the soil the greater potential there is for fibres to be released, however IOM publication TM/88/14 "the release of dispersed asbestos fibres from soil" 1988 concludes that:

-  Mixtures of asbestos in dry soils with asbestos content as low as 0.001% can produce airborne respirable asbestos concentrations greater than 0.1f/ml in dust clouds where the respirable dust concentrations are less than 5mg/m³.
-  An action limit is recommended of no higher than 0.001% asbestos in soils above which steps should be taken to minimise exposure to airborne fibres (e.g. by wetting).
-  The addition of relatively small quantities (10%) of water can reduce the airborne fibre concentrations by an order of magnitude.

Where asbestos has been identified at concentrations above 0.001% as free and dispersed fibres in the soil precautions need to be adopted. Concentrations below this are considered to be normal background, although good site practice dictates that the generation of dusts should be avoided and therefore any fugitive fibre release from minor concentrations should be kept to a practical minimum.

End Use

The use of materials containing asbestos and material containing asbestos is prohibited under EU legislation.

Asbestos containing materials can remain in situ under a suitable cover system which may be hard surfacing or soft landscaping (with or without hard dig layers and markers).

There is a risk that future maintenance may compromise such systems and details of the presence of asbestos should be kept in the Health and Safety File.

Publications from the JIWG provide guides for decision making in relation to construction.

The re-use of waste soils should be undertaken in accordance with the CL:AIRE Code of Practice and is subject to suitable risk assessments demonstrating low risk. There is nothing that specifically excludes the re-use of soils containing asbestos as fill to raise levels. However, the movement of materials increases the risk of fibres becoming airborne and suitable precautions will be required. Re-use of soils containing asbestos should be as per CARSOILS.

The re-use of soils containing asbestos at concentrations above hazardous waste levels may be met with regulatory opposition. Assuming a suitable strategy could be agreed this would take a considerable amount of time and is only likely to be feasible where there is a long program for implementation.

Asbestos in Soil as Free Fibres

Concentration (by weight)	Waste Disposal				Construction Issues	End Use	
	Recycle	Inert	SNR	Haz		Suitable for re-use on site	Precautions
Not detected	✓	✓			No precautions necessary, however on a brownfield site asbestos not previously identified may be found during works and a statement within the contractor's method statement for how they will deal with this unforeseen asbestos would be good practice to ensure compliance with CAR2012.	Yes.	None.
Trace (<0.001%)		✓ ²			Precautions are unlikely to be required, however a detailed method statement may be required to ensure compliance with CAR2012. Basic asbestos management good practice will be required. Typically precautions would include: - Ensuring soils do not dry out to become dusty. - Site personnel have the risk communicated at induction stage.	Yes Soils can be re-used under CL:AIRE CoP with the correct precautions in place.	Generally clean cover or hardstanding cover required.
0.001% – 0.099%			✓		Contractor needs to produce an Asbestos Management Plan in accordance with CAR2012 as part of their method statement. Typical precautions would include: - Site personnel have the risk communicated at induction stage. - Ensuring personnel have suitable training. - Task monitoring to inform PPE requirements. - Ensuring soils do not dry out to become dusty and that misting is available during groundworks. - Separate stockpiling. - Clean haulage routes.	Possibly. Soils may be able to be re-used under CL:AIRE CoP, subject to a satisfactory Risk Assessment and regulatory agreement with the correct precautions in place.	Clean cover with hard dig/demarcation layer or hardstanding cover required.
0.1+%				✓	Contractor needs to produce an Asbestos Management Plan in accordance with CAR2012 as part of their method statement. Typical precautions would include: - Site personnel have the risk communicated at induction stage. - Ensuring personnel have suitable training. - Task monitoring to inform PPE requirements. - Site wide and or perimeter monitoring. - Ensuring soils do not dry out to become dusty and that misting is available during groundworks. - Separate stockpiling.	Unlikely ³ Re-use of soils containing asbestos within an earthworks scheme will involve significant engineering and the risk for generating dusts will be significantly	Clean cover and a hard dig / demarcation layer. A plan should be in place for future excavations as part of the Health and Safety File.

Concentration (by weight)	Waste Disposal				Construction Issues	End Use	
	Recycle	Inert	SNR	Haz		Suitable for re-use on site	Precautions
					- Clean haulage routes. - Decontamination unit	increased with repeated handling and compaction.	

1. The standard laboratory detection limit is normally 0.001%. Below 0.001% is trace and currently regarded as not containing asbestos for the purposes of disposal off site. However the waste producer has a duty to fully classify the waste and the presence of trace asbestos should be declared. Consequently it is unlikely that a waste treatment site will take this soil and an inert landfill may make a commercial decision to only take it under some circumstances.
2. The re-use of soils containing asbestos at concentrations above hazardous waste is likely to meet with regulatory opposition. Assuming a suitable strategy could be agreed this would take a considerable amount of time and is only likely to be warranted where there a long program for implementation.

APPENDIX B

Exploratory Hole Logs



Rotary Open Hole Borehole No.

RO101

Sheet 1 of 2

PROJECT NO: C5980

CO-ORDS: 347015E, 390428N

Hole Type

Hole Type

PROJECT NAME: HALSNEAD GARDENS

LEVEL: 42.40m OD

Scale

1:50

CLIENT: UNITED LIVING

DATES: 29/01/25

Logged

Checked

DR / MAS

PH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description				
		Depth (m)	Type	Results								
					0.30	42.10		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone. Brown CLAY [Drillers' description]	1.0			
												2.0
												3.0
												4.0
												5.0
												6.0
												7.0
												8.0
												9.0
												10.0
Remarks					1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole terminated at 16.60m bgl due to solid drilling.				ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane			



Rotary Open Hole Borehole No.

RO101

Sheet 2 of 2

PROJECT NO: C5980

CO-ORDS: 347015E, 390428N

Hole Type

Hole Type

PROJECT NAME: HALSNEAD GARDENS

LEVEL: 42.40m OD

Scale

1:50

CLIENT: UNITED LIVING

DATES: 29/01/25

Logged

Checked

DR / MAS

PH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					12.70	29.70			11.0
									
									
									
									
									
									
									
									
									
					14.60	27.80		BROKEN GROUND [Drillers' description].	13.0
									
									
									
									
									
									
									
									
									
16.60	25.80		Solid drilling [Drillers' description].	14.0					
			End of Borehole at 16.60m	15.0					

Remarks

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole terminated at 16.60m bgl due to solid drilling.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane



Rotary Open Hole Borehole No.

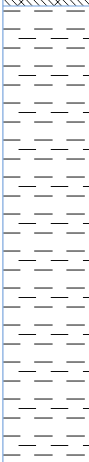
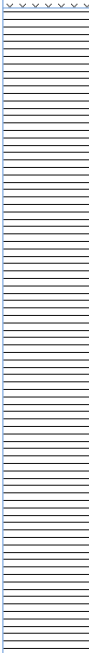
Sheet 1 of 3

Hole Type	Location	Depth (mm)	Material	Notes
1	Top Left	10	Aluminum	Standard
2	Top Right	10	Aluminum	Standard
3	Bottom Left	10	Aluminum	Standard
4	Bottom Right	10	Aluminum	Standard
5	Center	10	Aluminum	Standard

Hole Type	Location	Depth (mm)	Material	Notes
1	Top Left	10	Aluminum	Standard
2	Top Right	10	Aluminum	Standard
3	Bottom Left	10	Aluminum	Standard
4	Bottom Right	10	Aluminum	Standard
5	Center	10	Aluminum	Standard

Logged	Checked
--------	---------

PH

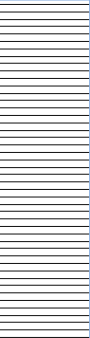
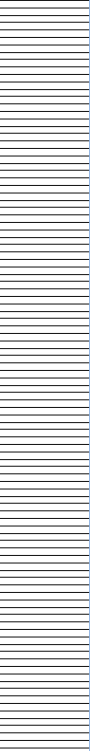
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	41.11		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.	1.0
								Brown CLAY [Drillers' description]	
5.20	36.31		MUDSTONE [Drillers' description]	5.0					
9.50	32.01		COAL [Drillers' description]	10.0					

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole completed at 30.00m bgl.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.
PROJECT NO: C5980							CO-ORDS: 347065E, 390394N		RO102
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 41.51m OD		Sheet 2 of 3
CLIENT: UNITED LIVING							DATES: 29/01/25		Hole Type
									RO
									Scale
									1:50
							Logged	Checked	
							DR / MAS	PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					11.20	30.31			11.0
								MUDSTONE [Drillers' description]	12.0
									13.0
									14.0
					15.20	26.31			15.0
								COAL [Drillers' description]	16.0
									17.0
					17.20	24.31			18.0
								MUDSTONE [Drillers' description]	19.0
									20.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.	
									RO102	
									Sheet 3 of 3	
PROJECT NO: C5980							CO-ORDS: 347065E, 390394N		Hole Type	
									RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 41.51m OD		Scale	
									1:50	
CLIENT: UNITED LIVING							DATES: 29/01/25		Logged	Checked
									DR / MAS	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					20.70	20.81			21.0	

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. R0103		
PROJECT NO: C5980							CO-ORDS: 347066E, 390353N		Sheet 1 of 3		
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 41.57m OD		Hole Type RO		
CLIENT: UNITED LIVING							DATES: 29/01/25		Scale 1:50		
							Logged DR / MAS		Checked PH		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
					0.40	41.17		MADE GROUND TOPSOIL: Grass over brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick, shale, coal, and mudstone. Brown CLAY [Drillers' description]			
											1.0
											2.0
					2.80	38.77		MUDSTONE [Drillers' description].			3.0
											4.0
											5.0
											6.0
											7.0
											8.0
											9.0
											10.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl. 6. Installation to 10.00m bgl: 5.00m plain 50mm PVC, 5.00m slotted PVC pipe.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		



Rotary Open Hole Borehole No.

RO103

Sheet 2 of 3

PROJECT NO: C5980

CO-ORDS: 347066E, 390353N

Hole Type

Hole Type

PROJECT NAME: HALSNEAD GARDENS

LEVEL: 41.57m OD

Scale

1:50

CLIENT: UNITED LIVING

DATES: 29/01/25

Logged

Checked

DR / MAS

PH

[illegible]

Remarks

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole completed at 30.00m bgl.
6. Installation to 10.00m bgl: 5.00m plain 50mm PVC, 5.00m slotted PVC pipe.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. R0103 Sheet 3 of 3		
PROJECT NO: C5980							CO-ORDS: 347066E, 390353N		Hole Type RO		
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 41.57m OD		Scale 1:50		
CLIENT: UNITED LIVING							DATES: 29/01/25		Logged DR / MAS Checked PH		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
					20.30	21.27		MUDSTONE [Drillers' description].			21.0
											22.0
											23.0
					24.00	17.57		COAL [Drillers' description].			24.0
											25.0
					25.80	15.77		MUDSTONE [Drillers' description].			26.0
											27.0
											28.0
											29.0
					30.00	11.57		End of Borehole at 30.00m			30.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl. 6. Installation to 10.00m bgl: 5.00m plain 50mm PVC, 5.00m slotted PVC pipe.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.	
									RO104	
									Sheet 1 of 3	
PROJECT NO: C5980							CO-ORDS: 347114E, 390292N		Hole Type	
									RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 41.82m OD		Scale	
									1:50	
CLIENT: UNITED LIVING							DATES: 29/01/25		Logged	Checked
									DR / MAS	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.30	41.52		MADE GROUND TOPSOIL: Grass over brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick and coal. Brown CLAY [Drillers' description]		1.0



Rotary Open Hole Borehole No.

RO104

Sheet 2 of 3

CO-ORDS: 347114E, 390292N

LEVEL: 41.82m OD

DATES: 29/01/25

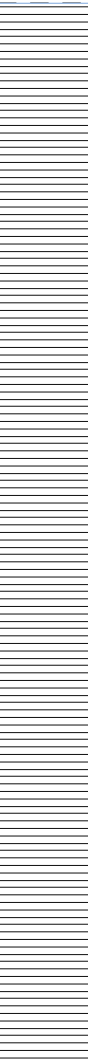
Logged	Checked
DR / MAS	PH

[illegible]

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole completed at 30.00m bgl.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. RO104 Sheet 3 of 3	
PROJECT NO: C5980							CO-ORDS: 347114E, 390292N		Hole Type RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 41.82m OD		Scale 1:50	
CLIENT: UNITED LIVING							DATES: 29/01/25		Logged DR / MAS Checked PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					23.20	18.62		MUDSTONE [Drillers' description].		21.0
										22.0
										23.0
					26.20	15.62		COAL [Drillers' description].		24.0
										25.0
										26.0
								MUDSTONE [Drillers' description].		27.0
										28.0
										29.0
					30.00	11.82		End of Borehole at 30.00m		30.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. RO105 Sheet 1 of 3		
PROJECT NO: C5980							CO-ORDS: 347153E, 390271N		Hole Type RO		
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 42.21m OD		Scale 1:50		
CLIENT: UNITED LIVING							DATES: 29/01/25		Logged DR / MAS Checked PH		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
					0.30	41.91		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal. Brown CLAY [Drillers' description]			
					3.00	39.21		MUDSTONE [Drillers' description].			
Remarks							1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. Concrete obstruction encountered at 0.30m bgl so location was moved 2.00m East. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.				
							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane				



Rotary Open Hole Borehole No.

Sheet 2 of 3

CO-ORDS: 347153E, 390271N

LEVEL: 42.21m OD

DATES: 29/01/25

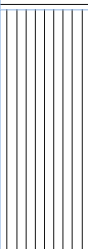
Logged	Checked
DR / MAS	PH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					19.20	23.01		COAL [Drillers' description].	11.0
									12.0
									13.0
									14.0
									15.0
									16.0
									17.0
									18.0
									19.0
									20.0

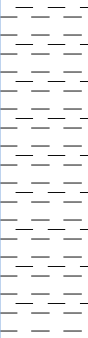
1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. Concrete obstruction encountered at 0.30m bgl so location was moved 2.00m East.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole completed at 30.00m bgl.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.	
									RO105	
									Sheet 3 of 3	
PROJECT NO: C5980							CO-ORDS: 347153E, 390271N		Hole Type	
									RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 42.21m OD		Scale	
									1:50	
CLIENT: UNITED LIVING							DATES: 29/01/25		Logged	Checked
									DR / MAS	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					20.40	21.81		MUDSTONE [Drillers' description].	21.0	

BROWNFIELD SOLUTIONS LTD							Rotary Open Hole Borehole No.		
							Borehole Log		
							RO106		
							Sheet 1 of 2		
PROJECT NO: C5980							CO-ORDS: 347208E, 390270N		
PROJECT NAME: HALSNEAD GARDENS							Hole Type		
							RO		
							Scale		
							1:50		
CLIENT: UNITED LIVING							DATES: 28/01/25		
							Logged	Checked	
							DR / MAS	PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	41.57		MADE GROUND TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of brick, sandstone, and coal. Brown CLAY [Drillers' description]	1.0
					2.90	38.97		MUDSTONE [Drillers' description].	3.0
					5.80	36.07		Soft drilling [Drillers' description].	6.0
					7.40	34.47		Solid drilling [Drillers' description].	8.0
									9.0
									10.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole terminated at 10.40m bgl due to collapse. 5. No installation.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. RO106 Sheet 2 of 2	
PROJECT NO: C5980							CO-ORDS: 347208E, 390270N		Hole Type RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 41.87m OD		Scale 1:50	
CLIENT: UNITED LIVING							DATES: 28/01/25		Logged DR / MAS Checked PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results	10.40	31.47		End of Borehole at 10.40m		
									11.0	
									12.0	
									13.0	
									14.0	
									15.0	
									16.0	
									17.0	
									18.0	
									19.0	
									20.0	
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole terminated at 10.40m bgl due to collapse. 5. No installation.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.					
									RO107					
									Sheet 1 of 2					
PROJECT NO: C5980							CO-ORDS: 347297E, 390266N		Hole Type					
									RO					
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.44m OD		Scale					
									1:50					
CLIENT: UNITED LIVING							DATES: 31/01/25		Logged	Checked				
									DR / MAS	PH				
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description						
		Depth (m)	Type	Results										
					0.30	43.14		MADE GROUND TOPSOIL: Grass over brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick and mudstone. CLAY [Drillers' description]		1.0				
														2.0
														3.0
														4.0
														5.0
														6.0
					2.60	40.84		MUDSTONE [Drillers' description]		7.0				
										8.0				
										9.0				
										10.0				
					6.50	36.94		COAL [Drillers' description]						
					6.70	36.74		BROKEN GROUND [Drillers' description].						
					8.20	35.24		Solid drilling [Drillers' description].						
Remarks														
1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole terminated at 10.20m bgl due to solid drilling. 6. No installation.								ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane						

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. R0107 Sheet 2 of 2	
PROJECT NO: C5980							CO-ORDS: 347297E, 390266N		Hole Type RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.44m OD		Scale 1:50	
CLIENT: UNITED LIVING							DATES: 31/01/25		Logged DR / MAS	Checked PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					10.20	33.24		End of Borehole at 10.20m		
								11.0		
								12.0		
								13.0		
								14.0		
								15.0		
								16.0		
								17.0		
								18.0		
								19.0		
								20.0		
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole terminated at 10.20m bgl due to solid drilling. 6. No installation.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

BROWNFIELD SOLUTIONS LTD							Rotary Open Hole Borehole No.				
							Borehole Log				
							RO107A				
							Sheet 1 of 4				
PROJECT NO: C5980							CO-ORDS: 347308E, 390254N				
PROJECT NAME: HALSNEAD GARDENS							Hole Type				
							RO				
							Scale				
							1:50				
CLIENT: UNITED LIVING							DATES: 31/01/25				
							Logged	Checked			
							DR / MAS	PH			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
					0.30			MADE GROUND TOPSOIL: Grass over brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick and mudstone. Brown CLAY [Drillers' description]	1.0		
					2.50					MUDSTONE [Drillers' description].	3.0
3.90		COAL [Drillers' description].	4.0								
5.20		MUDSTONE [Drillers' description].	6.0								
								10.0			
Remarks							1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.		ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		
							2. Hand pit excavation to 1.20m bgl.				
3. Groundwater not encountered.											
4. Borehole sides stable.											
5. Borehole completed at 40.00m bgl.											

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. RO107A Sheet 2 of 4	
PROJECT NO: C5980							CO-ORDS: 347308E, 390254N		Hole Type RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL:		Scale 1:50	
CLIENT: UNITED LIVING							DATES: 31/01/25		Logged DR / MAS Checked PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					12.30					11.0
										12.0
					13.40			COAL [Drillers' description].		13.0
										14.0
					15.00			Black SHALE [Drillers' description].		15.0
					15.70			MUDSTONE and SILTSTONE [Drillers' description].		16.0
										17.0
										18.0
										19.0
										20.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 40.00m bgl.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. RO107A Sheet 3 of 4	
PROJECT NO: C5980							CO-ORDS: 347308E, 390254N		Hole Type RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL:		Scale 1:50	
CLIENT: UNITED LIVING							DATES: 31/01/25		Logged DR / MAS Checked PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					23.10					21.0
										22.0
										23.0
								COAL [Drillers' description].		24.0
					24.50					25.0
								MUDSTONE [Drillers' description].		26.0
										27.0
										28.0
										29.0
										30.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 40.00m bgl.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	



Rotary Open Hole Borehole No.

RO107A

Sheet 4 of 4

CO-ORDS: 347308E, 390254N

LEVEL:

DATES: 31/01/25

Logged

Checked

DR / MAS

PH

[illegible]

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole completed at 40.00m bgl.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD							Rotary Open Hole Borehole No.		
							Borehole Log		
							RO108		
							Sheet 1 of 3		
PROJECT NO: C5980							CO-ORDS: 347117E, 390192N		
							Hole Type		
							RO		
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.37m OD		
							Scale		
							1:50		
CLIENT: UNITED LIVING							DATES: 28/01/25		
							Logged	Checked	
							DR / MAS	PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	43.07		MADE GROUND TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of brick, sandstone, and coal. Brown CLAY [Drillers' description].	
						1.0			
						2.0			
						3.0			
						4.0			
						5.0			
						6.0			
						7.0			
						8.0			
						9.0			
					3.50	39.87		MUDSTONE [Drillers' description].	
						1.0			
						2.0			
						3.0			
						4.0			
						5.0			
						6.0			
						7.0			
						8.0			
						9.0			
					6.90	36.47		SILTSTONE [Drillers' description].	
						1.0			
						2.0			
						3.0			
						4.0			
						5.0			
						6.0			
						7.0			
						8.0			
						9.0			
					9.20	34.17		MUDSTONE [Drillers' description].	
						1.0			
						2.0			
						3.0			
						4.0			
						5.0			
						6.0			
						7.0			
						8.0			
						9.0			
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Rotary Open Hole Borehole No. RO108 Sheet 2 of 3 Borehole Log			
PROJECT NO: C5980							CO-ORDS: 347117E, 390192N		Hole Type RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.37m OD		Scale 1:50	
CLIENT: UNITED LIVING							DATES: 28/01/25		Logged DR / MAS	Checked PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					11.20	32.17		SILTSTONE and MUDSTONE [Drillers' description].		
								11.0		
								12.0		
								13.0		
								14.0		
								15.0		
								16.0		
								17.0		
								18.0		
								19.0		
								20.0		
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	



Rotary Open Hole Borehole No.

RO108

Sheet 3 of 3

PROJECT NO: C5980

CO-ORDS: 347117E, 390192N

Hole Type

Hole Type

PROJECT NAME: HALSNEAD GARDENS

LEVEL: 43.37m OD

Scale

Scale

CLIENT: UNITED LIVING

DATES: 28/01/25

Logged

Checked

DR / MAS

PH

[illegible]

Remarks

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole completed at 30.00m bgl.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.	
									RO109	
									Sheet 1 of 3	
PROJECT NO: C5980							CO-ORDS: 347192E, 390220N		Hole Type	
									RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.39m OD		Scale	
									1:50	
CLIENT: UNITED LIVING							DATES: 28/01/25		Logged	Checked
									DR / MAS	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.30	43.09		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal. Brown sandy CLAY [Drillers' description].		1.0
										4.50
					7.60	35.79		COAL [Drillers' description].		8.0
										10.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. RO109 Sheet 2 of 3	
PROJECT NO: C5980							CO-ORDS: 347192E, 390220N		Hole Type RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.39m OD		Scale 1:50	
CLIENT: UNITED LIVING							DATES: 28/01/25		Logged DR / MAS	Checked PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					10.20	33.19		MUDSTONE [Drillers' description].		
										11.0
										12.0
										13.0
										14.0
										15.0
										16.0
										17.0
										18.0
										19.0
										20.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	



Rotary Open Hole Borehole No.

RO109

Sheet 3 of 3

PROJECT NO: C5980

CO-ORDS: 347192E, 390220N

Hole Type

Hole Type

PROJECT NAME: HALSNEAD GARDENS

LEVEL: 43.39m OD

Scale

Scale

CLIENT: UNITED LIVING

DATES: 28/01/25

Logged	Checked
--------	---------

Logged	Checked
--------	---------

DR / MAS

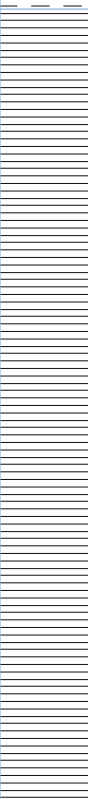
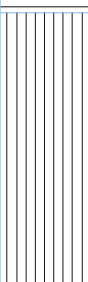
DR / MAS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description					
		Depth (m)	Type	Results									
					20.40	22.99		COAL [Drillers' description].	21.0				
					22.00	21.39			MUDSTONE [Drillers' description].	22.0			
										23.0			
										24.0			
										25.0			
										26.0			
									27.0				
							27.20		16.19		COAL [Drillers' description].	28.0	
							28.30		15.09			MUDSTONE [Drillers' description].	29.0
							30.00		13.39			End of Borehole at 30.00m	30.0

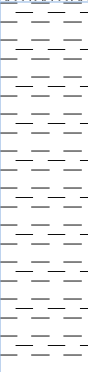
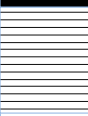
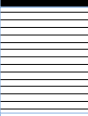
Remarks

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole completed at 30.00m bgl.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.					
									RO110					
									Sheet 1 of 2					
PROJECT NO: C5980							CO-ORDS: 347248E, 390217N		Hole Type					
									RO					
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.71m OD		Scale					
									1:50					
CLIENT: UNITED LIVING							DATES: 28/01/25		Logged	Checked				
									DR / MAS	PH				
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description						
		Depth (m)	Type	Results										
					0.30	43.41		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone. Brown CLAY [Drillers' description].		1.0				
														
						2.90	40.81		MUDSTONE [Drillers' description].		3.0			
8.20	35.51		Soft drilling [Drillers' description].		9.0									
					10.0									
Remarks							1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole terminated at 12.50m bgl due to collapse. 5. No installation.				ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane			

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.	
									RO110	
									Sheet 2 of 2	
PROJECT NO: C5980							CO-ORDS: 347248E, 390217N		Hole Type	
									RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.71m OD		Scale	
									1:50	
CLIENT: UNITED LIVING							DATES: 28/01/25		Logged	Checked
									DR / MAS	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					10.50	33.21	<			

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.	
									RO111	
									Sheet 1 of 3	
PROJECT NO: C5980							CO-ORDS: 347329E, 390225N		Hole Type	
									RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 44.50m OD		Scale	
									1:50	
CLIENT: UNITED LIVING							DATES: 28/01/25		Logged	Checked
									DR / MAS	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.30	44.20		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone and coal. Brown CLAY [Drillers' description]		1.0
						2.0				
						MUDSTONE [Drillers' description].	3.0			
					2.80		41.70		4.0	
						COAL [Drillers' description].	5.0			
							6.0			
						MUDSTONE [Drillers' description].	7.0			
							8.0			
							9.0			
					8.00		36.50		10.0	
					9.30	35.20				
										
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		



Rotary Open Hole Borehole No.

RO111

Sheet 2 of 3

PROJECT NO: C5980

CO-ORDS: 347329E, 390225N

Hole Type

PROJECT NAME: HALSNEAD GARDENS

LEVEL: 44.50m OD

Hole Type

RO

Scale

1:50

CLIENT: UNITED LIVING

DATES: 28/01/25

Logged

Checked

DR / MAS

PH

[illegible]

Remarks

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole completed at 30.00m bgl.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane



Rotary Open Hole Borehole No.

Sheet 3 of 3

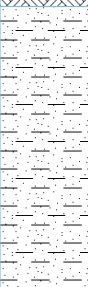
CO-ORDS: 347329E, 390225N

LEVEL: 44.50m OD

DATES: 28/01/25

Logged	Checked
DR / MAS	PH

Remarks	1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.	ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane
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BROWNFIELD SOLUTIONS LTD							Rotary Open Hole Borehole No.			
							Borehole Log			
							R0112			
							Sheet 1 of 3			
PROJECT NO: C5980							CO-ORDS: 347170E, 390135N			
PROJECT NAME: HALSNEAD GARDENS							Hole Type			
							RO			
							Scale			
							1:50			
CLIENT: UNITED LIVING							DATES: 30/01/25			
							Logged	Checked		
							GL / MAS	PH		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.70	43.77		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.		
								Brown sandy CLAY [Drillers' description].		
					2.60	41.87		Black SHALE [Drillers' description].		
								Grey MUDSTONE [Drillers' description].		
					2.80	41.67				



Rotary Open Hole Borehole No.

Sheet 2 of 3

CO-ORDS: 347170E, 390135N

LEVEL: 44.47m OD

DATES: 30/01/25

Logged	Checked
GL / MAS	PH

[illegible]



Rotary Open Hole Borehole No.

RO112

Sheet 3 of 3

PROJECT NO: C5980

CO-ORDS: 347170E, 390135N

Hole Type

Hole Type

PROJECT NAME: HALSNEAD GARDENS

LEVEL: 44.47m OD

Scale

1:50

CLIENT: UNITED LIVING

DATES: 30/01/25

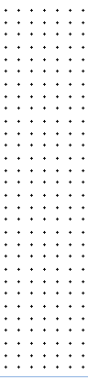
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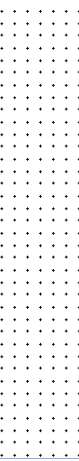
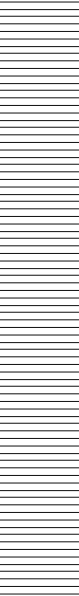
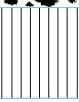
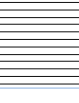
Checked

GL / MAS

PH

Remarks	1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.	ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane
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 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. R0113 Sheet 1 of 3	
PROJECT NO: C5980							CO-ORDS: 347228E, 390156N		Hole Type RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.90m OD		Scale 1:50	
CLIENT: UNITED LIVING							DATES: 30/01/25		Logged GL / MAS Checked PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.40	43.50		MADE GROUND TOPSOIL: Grass over firm brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of brick, sandstone, and coal.		
					0.80	43.10		Brown SAND [Drillers' description].		
								Very soft brown SANDSTONE [Drillers' description].		1.0
					3.30	40.60		SANDSTONE [Drillers' description].		2.0
										3.0
										4.0
										5.0
										6.0
										7.0
										8.0
										9.0
										10.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole terminated at 24.00m bgl due to solid drilling.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.
									R0113
									Sheet 2 of 3
PROJECT NO: C5980							CO-ORDS: 347228E, 390156N		Hole Type
									RO
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.90m OD		Scale
									1:50
CLIENT: UNITED LIVING							DATES: 30/01/25		Logged
									Checked
									GL / MAS
									PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					13.10	30.80		MUDSTONE [Drillers' description].	11.0
									12.0
					17.10	26.80		BROKEN GROUND [Drillers' description].	13.0
					18.80	25.10		Soft drilling [Drillers' description].	14.0
					19.40	24.50		Solid drilling [Drillers' description].	15.0
									16.0
									17.0
									18.0
									19.0
									20.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole terminated at 24.00m bgl due to solid drilling.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	



Rotary Open Hole Borehole No.

RO113

Sheet 3 of 3

PROJECT NO: C5980

CO-ORDS: 347228E, 390156N

Hole Type

Hole Type

PROJECT NAME: HALSNEAD GARDENS

LEVEL: 43.90m OD

Scale

Scale

CLIENT: UNITED LIVING

DATES: 30/01/25

Logged

Checked

GL / MAS

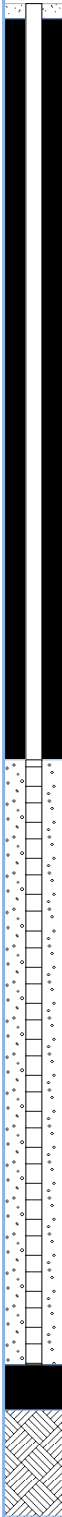
PH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					24.00	19.90		End of Borehole at 24.00m	21.0
									22.0
									23.0
									24.0
									25.0
									26.0
									27.0
									28.0
									29.0
									30.0

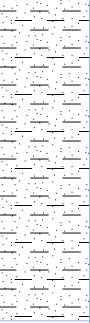
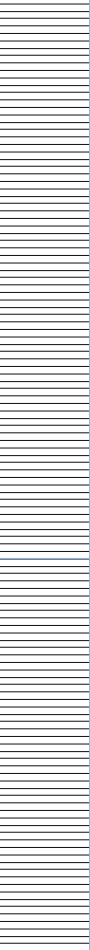
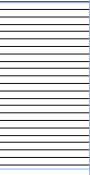
Remarks

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole terminated at 24.00m bgl due to solid drilling.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.	
									RO114	
									Sheet 1 of 2	
PROJECT NO: C5980							CO-ORDS: 347280E, 390178N		Hole Type	
									RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 44.40m OD		Scale	
									1:50	
CLIENT: UNITED LIVING							DATES: 30/01/25		Logged	Checked
									GL / MAS	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.40	44.00		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone and coal.		
					0.80	43.60		Black CLAY [Drillers' description].		
								COAL [Drillers' description].		1.0
					2.10	42.30		Grey MUDSTONE [Drillers' description].		2.0
										3.0
										4.0
					4.90	39.50		Very soft MUDSTONE [Drillers' description].		5.0
										6.0
										7.0
										8.0
					9.30	35.10		BROKEN GROUND [Drillers' description].		9.0
										10.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole terminated at 15.00m bgl due to solid drilling. 6. Installation to 9.00m bgl: 5.00m plain 50mm PVC, 4.00m slotted PVC pipe.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.	
									R0114	
									Sheet 2 of 2	
PROJECT NO: C5980							CO-ORDS: 347280E, 390178N		Hole Type	
									RO	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 44.40m OD		Scale	
									1:50	
CLIENT: UNITED LIVING							DATES: 30/01/25		Logged	Checked
									GL / MAS	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					11.00	33.40		Solid drilling [Drillers' description].		11.0
					15.00	29.40				12.0
				End of Borehole at 15.00m				13.0		
										14.0
									15.0	
										16.0
									17.0	
										18.0
									19.0	
										20.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole terminated at 15.00m bgl due to solid drilling. 6. Installation to 9.00m bgl: 5.00m plain 50mm PVC, 4.00m slotted PVC pipe.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No.
									R0115
									Sheet 1 of 3
PROJECT NO: C5980							CO-ORDS: 347334E, 390159N		Hole Type
									RO
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 44.92m OD		Scale
									1:50
CLIENT: UNITED LIVING							DATES: 30/01/25		Logged
									Checked
									GL / MAS
									PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	44.52		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone and coal. Brown sandy CLAY [Drillers' description].	
					2.60	42.32		Grey MUDSTONE [Drillers' description].	
					6.30	38.62		Black MUDSTONE [Drillers' description].	
					8.90	36.02		Grey MUDSTONE [Drillers' description].	
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Rotary Open Hole Borehole No. R0115 Sheet 2 of 3			
PROJECT NO: C5980							CO-ORDS: 347334E, 390159N		Hole Type RO			
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 44.92m OD		Scale 1:50			
CLIENT: UNITED LIVING							DATES: 30/01/25		Logged GL / MAS		Checked PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description				
		Depth (m)	Type	Results								
					13.30	31.62						
					14.80	30.12		COAL [Drillers' description].				
								Grey MUDSTONE [Drillers' description].				
Remarks 1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit excavation to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole sides stable. 5. Borehole completed at 30.00m bgl.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane					



Rotary Open Hole Borehole No.

RO115

Sheet 3 of 3

PROJECT NO: C5980

CO-ORDS: 347334E, 390159N

Hole Type

Hole Type

PROJECT NAME: HALSNEAD GARDENS

LEVEL: 44.92m OD

Scale

Scale

CLIENT: UNITED LIVING

DATES: 30/01/25

Logged

Checked

GL / MAS

PH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description				
		Depth (m)	Type	Results								
					26.00	18.92		BROKEN GROUND [Drillers' description].	21.0			
									22.0			
									23.0			
									24.0			
									25.0			
							27.30		17.62		Solid drilling [Drillers' description].	26.0
												27.0
							30.00		14.92		End of Borehole at 30.00m	28.0
												29.0
												30.0

Remarks

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater not encountered.
4. Borehole sides stable.
5. Borehole completed at 30.00m bgl.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane



No.

SA101

Sheet 1 of 1

CO-ORDS: 347102E, 390198N

LEVEL: 43.49m OD

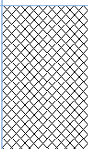
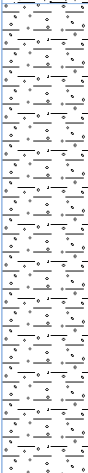
DATES: 29/01/25

Logged

Checked

MAS

PH

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
				0.50	42.99		MADE GROUND TOPSOIL: Grass over greyish brown slightly gravelly slightly sandy clay with frequent roots. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse of coal, brick, and mudstone.	1.0
				0.80	42.69		Soft brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse of coal, quartz, and sandstone.	
							Stiff reddish brown and grey slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of coal and sandstone.	
				2.40	41.09		Weak orangish brown destructured SANDSTONE recovered as sandy GRAVEL. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of sandstone.	
				3.00	40.49		End of Trial Pit at 3.00m	3.0
								4.0
								5.0

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 3.00m bgl.
4. Trial pit walls stable.
5. Soakaway infiltration test undertaken between 2.00 - 3.00m bgl.
6. Location backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane



No.

SA102

Sheet 1 of 1

CO-ORDS: 347178E, 390166N

LEVEL: 44.70m OD

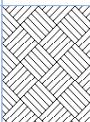
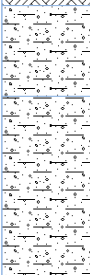
DATES: 29/01/25

Logged

Checked

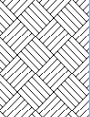
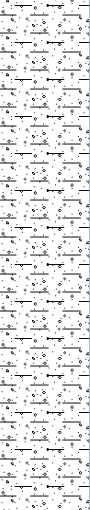
MAS

PH

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.60	HSV	60kPa	0.40	44.30		TOPSOIL: Grass over firm brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.	1.0
				0.70	44.00		Firm orangish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of coal and sandstone.	
							Stiff orangish brown and grey gravelly slightly sandy CLAY with rare boulders. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of sandstone. Boulders are angular to sub-rounded of sandstone up to 300mm in diameter.	
				1.30	43.40		End of Trial Pit at 1.30m	
								2.0
								3.0
								4.0
								5.0

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 1.30m bgl.
4. Trial pit walls stable.
5. Soakaway infiltration test undertaken between 0.48 - 1.30m bgl.
6. Location backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

 BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. TP101 Sheet 1 of 1	
PROJECT NO: C5980						CO-ORDS: 347018E, 390450N		Hole Type TP	
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 42.65m OD		Scale 1:25	
CLIENT: UNITED LIVING						DATES: 31/01/25		Logged MAS	Checked PH
Water Strikes	Sample and In Situ Testing			Depth (m) 0.40	Level (m OD) 42.25	Legend  	Stratum Description		1.0 2.0 3.0 4.0 5.0
	Depth (m) 0.10-0.40	Type ES	Results 85kPa				TOPSOIL: Grass over stiff brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone and coal.		
	0.20	HSV							
	0.40-2.10	D					Very stiff orangish brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone and coal.		
	0.80	HSV	140kPa						
End of Trial Pit at 2.10m									
Remarks 1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. No groundwater encountered. 3. Trial pit excavated to 2.10m bgl due to reaching target depth. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion. ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane									



No.

TP102

Sheet 1 of 1

PROJECT NO: C5980

CO-ORDS: 347019E, 390405N

Hole Type

Hole Type

PROJECT NAME: HALSNEAD GARDENS

LEVEL: 42.29m OD

Scale

1:25

CLIENT: UNITED LIVING

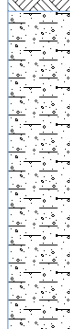
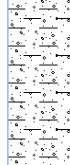
DATES: 31/01/25

Logged

Checked

MAS

PH

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.30	ES	60kPa	0.30	41.99		TOPSOIL: Grass over firm brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.	1.0
	0.20	HSV						
	0.30-2.00	ES						
	0.70	HSV	140kPa		Firm orangish brown and grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone, sandstone, and coal. <i>0.70m bgl: Becoming very stiff.</i>	2.0		
	1.50	HSV	140kPa					
2.00	D HSV	140kPa	2.00	40.29		End of Trial Pit at 2.00m	3.0	
								4.0
								5.0

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 2.00m bgl due to reaching target depth.
4. Trial pit walls stable.
5. Location backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

 BROWNFIELD SOLUTIONS LTD						Trial Pit Log			No.	
TP103										
PROJECT NO: C5980						CO-ORDS: 347101E, 390284N			Sheet 1 of 1	
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 42.37m OD			Hole Type	
CLIENT: UNITED LIVING						DATES: 31/01/25			TP	
									Scale	
									1:25	
									Logged	Checked
									MAS	PH
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			1.0



No.

TP106

Sheet 1 of 1

CO-ORDS: 347077E, 390375N

LEVEL: 41.62m OD

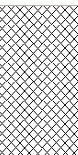
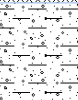
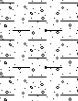
DATES: 31/01/25

Logged

Checked

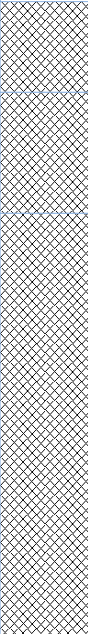
MAS

PH

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.50	ES	90kPa	0.50	41.12		MADE GROUND TOPSOIL: Grass over brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick and mudstone. Rare metal fragments up to 300mm in diameter.	1.0
	0.20	HSV						
	0.50-2.30	D	100kPa	0.50	41.12		Stiff orangish brown and grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone and quartz. <i>0.70m bgl: Becoming very stiff.</i>	2.0
	0.80	HSV						
	1.70	HSV	140kPa	2.30	39.32		End of Trial Pit at 2.30m	3.0
2.30	HSV	140kPa						
								5.0

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 2.30m bgl due to reaching target depth.
4. Trial pit walls stable.
5. Location backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. TP107				
PROJECT NO: C5980						CO-ORDS: 347080E, 390338N		Sheet 1 of 1				
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 41.47m OD		Hole Type TP				
CLIENT: UNITED LIVING						DATES: 31/01/25		Scale 1:25				
						Logged		Checked				
						MAS		PH				
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description					
	Depth (m)	Type	Results									
	0.10-0.30	ES	35kPa	0.30	41.17		MADE GROUND TOPSOIL: Grass over brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick, shale, coal, ceramic, and mudstone. <i>0.20m bgl: Brick cobbles encountered. Cobbles are sub-angular to sub-rounded up to 200mm in diameter.</i> MADE GROUND: Light orangish brown slightly gravelly slightly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick, shale, ceramic, coal, and plastic. <i>0.30 - 0.70m bgl: Rare brick cobbles encountered. Cobbles are sub-angular to rounded fine to coarse up to 200mm in diameter.</i> MADE GROUND: Orangish brown and grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal, brick, sandstone, ceramic, and shale. <i>1.90m bgl: Bricks and glass bottle encountered.</i>	1.0				
	0.20	HSV										
	0.30-0.70	ES										
	0.70-2.10	D	140kPa	0.70	40.77							
	0.80	HSV										
	1.50	HSV	140kPa	2.10	39.37							
End of Trial Pit at 2.10m								2.0				
								3.0				
								4.0				
								5.0				
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Groundwater encountered at 1.60m bgl with small seepage. 3. Trial pit excavated to 2.10m bgl due to reaching target depth. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.					ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane					



No.

TP108

Sheet 1 of 1

CO-ORDS: 347109E, 390331N

LEVEL: 41.17m OD

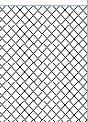
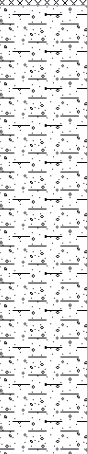
DATES: 31/01/25

Logged

Checked

MAS

PH

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.40	ES	60kPa	0.40	40.77		MADE GROUND TOPSOIL: Grass over brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick and coal.	1.0
	0.30	HSV						
	0.40-1.90	D						
	0.60	HSV	140kPa	1.90	39.27		Very stiff brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal. <i>0.70m bgl: Coal cobbles encountered. Cobbles are angular to sub-rounded up to 200mm in diameter.</i>	2.0
	1.00	HSV	140kPa					
	1.70	HSV	140kPa					
	1.90	D						
End of Trial Pit at 1.90m							3.0	
							4.0	
							5.0	

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 1.90m bgl due to reaching target depth.
4. Trial pit walls stable.
5. Location backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane



No.

TP109

Sheet 1 of 1

CO-ORDS: 347225E, 390187N

LEVEL: 43.78m OD

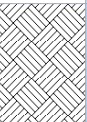
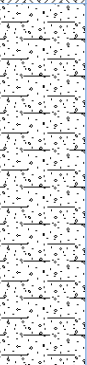
DATES: 29/01/25

Logged

Checked

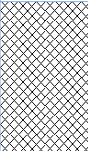
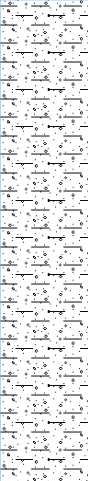
MAS

PH

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.40	ES		0.40	43.38		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.	1.0
	0.40-1.60	ES					Yellowish brown gravelly slightly clayey SAND. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse of sandstone.	
	1.60-2.40	D		1.60	42.18		Weak yellowish brown destructured SANDSTONE recovered as slightly sandy slightly clayey COBBLES with moderate gravel content. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of sandstone. Cobbles are angular to sub-rounded of sandstone up to 200mm in diameter. <i>2.00m bgl: Sandstone boulder encountered. Boulder is sub-angular up to 400mm in diameter.</i>	2.0
				2.40	41.38		End of Trial Pit at 2.40m	3.0
								4.0
								5.0

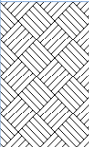
1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 2.40m bgl due to solid ground conditions.
4. Trial pit walls stable.
5. Location backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

 BROWNFIELD SOLUTIONS LTD						Trial Pit Log			No. TP111 Sheet 1 of 1 Hole Type TP Scale 1:25 Logged MAS Checked PH	
PROJECT NO: C5980						CO-ORDS: 347096E, 390272N				
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 42.94m OD				
CLIENT: UNITED LIVING						DATES: 31/01/25				
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
	Depth (m)	Type	Results							
	0.10-0.50 0.20	ES HSV	55kPa	0.50	42.44		MADE GROUND TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of brick, mudstone, shale, and coal. 0.10 - 0.20m bgl: Sandstone flagstones encountered. 0.10 - 0.20m bgl: Mudstone and brick cobbles encountered. Cobbles are sub-angular to rounded up to 200mm in diameter. Very stiff yellowish brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal.		1.0	
	0.50-2.10 0.60	D HSV	140kPa							
	1.00	HSV	140kPa							
	2.00	HSV	140kPa	2.10	40.84		End of Trial Pit at 2.10m		2.0	
									3.0	
									4.0	
									5.0	
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. No groundwater encountered. 3. Trial pit excavated to 2.10m bgl due to reaching target depth. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.	
PROJECT NO: C5980						CO-ORDS: 347180E, 390254N		TP112	
								Sheet 1 of 1	
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 42.67m OD		Hole Type	
								TP	
CLIENT: UNITED LIVING						DATES: 28/01/25		Scale	
								1:25	
								Logged	Checked
								MAS	PH
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10-0.30	ES	130kPa	0.30	42.37		TOPSOIL: Grass over stiff brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.		1.0
	0.20	HSV							
	0.30-0.70	ES							
	0.40	HSV							
	1.20	HSV	140kPa	0.70	41.97		Stiff reddish brown and dark brown slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of coal, sandstone, and mudstone.		
	1.90-2.70	D		1.90	40.77		Stiff orangish brown and grey slightly sandy CLAY. Sand is fine to coarse.		
			2.70	39.97		Weak orangish brown destructured SANDSTONE recovered as sandy GRAVEL. Sand is fine to medium. Gravel is angular to sub-rounded fine to coarse of sandstone.		2.0	
End of Trial Pit at 2.70m									3.0
									4.0
									5.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. No groundwater encountered. 3. Trial pit excavated to 2.70m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. TP113			
PROJECT NO: C5980						CO-ORDS: 347210E, 390261N		Sheet 1 of 1			
								Hole Type TP			
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 42.00m OD		Scale 1:25			
CLIENT: UNITED LIVING						DATES: 30/01/25		Logged	Checked		
								MAS	PH		
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description				
	Depth (m)	Type	Results								
	0.10-0.30	ES	120kPa	0.30	41.70		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.			1.02.03.04.05.0	
	0.30-0.60	ES					Stiff greyish brown slightly gravelly slightly sandy CLAY with frequent roots. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of mudstone.				
	0.50	HSV		0.60	41.40		Stiff reddish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse of mudstone and coal.				
	0.60-2.30	D					1.00m bgl: Becoming very stiff.				
	1.00	HSV	140kPa	2.30	39.70		1.70m bgl: Coal and mudstone boulders encountered. Boulders are sub-angular to sub-rounded up to 300mm in diameter.				
	2.00	HSV	140kPa				Weak grey destructured MUDSTONE recovered as clayey GRAVEL with moderate cobble content. Gravel is angular to sub-rounded fine to coarse of mudstone. Cobbles are angular to sub-rounded of mudstone up to 200mm in diameter.				
	2.30-3.30	D					End of Trial Pit at 3.30m				
				3.30	38.70						4.0
											5.0
	Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Groundwater encountered at 1.80m bgl with medium seepage. 3. Trial pit excavated to 3.30m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.	
PROJECT NO: C5980						CO-ORDS: 347273E, 390270N		TP115	
								Sheet 1 of 1	
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 42.78m OD		Hole Type	
								TP	
CLIENT: UNITED LIVING						DATES: 31/01/25		Scale	
								1:25	
								Logged	Checked
								MAS	PH
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10-0.50	ES	65kPa	0.50	42.28		TOPSOIL: Grass over firm brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.		
	0.30	HSV							
	0.50-2.10	D				140kPa			Stiff orangish brown and grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of sandstone and coal.
	0.70	HSV							
	1.20	HSV	140kPa						
2.10	HSV	140kPa	2.10	40.67		End of Trial Pit at 2.10m			
</									



No.

TP117

Sheet 1 of 1

CO-ORDS: 347343E, 390274N

LEVEL: 44.70m OD

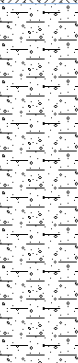
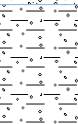
DATES: 31/01/25

Logged

Checked

MAS

PH

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.40	ES		0.40	44.30		TOPSOIL: Grass over firm brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone and coal.	1.0
	0.30	HSV	65kPa					
	0.40-1.60	D						
	0.50	HSV	140kPa					
	1.00	HSV	140kPa		Very stiff orangish brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal.			
	1.50	HSV	140kPa					
	1.60-2.00	D						
	1.70	HSV	140kPa					
				1.60	43.10		Very stiff blackish grey gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of coal.	2.0
			2.00	42.70				
						End of Trial Pit at 2.00m	5.0	

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 2.00m bgl due to reaching target depth.
4. Trial pit walls stable.
5. Location backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane



No.

TP118

Sheet 1 of 1

CO-ORDS: 347132E, 390234N

LEVEL: 43.36m OD

DATES: 29/01/25

Logged

Checked

MAS

PH

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.40	ES	100kPa	0.40	42.96		TOPSOIL: Grass over stiff brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.	1.0
	0.30	HSV						
	0.40-0.60	ES	140kPa	0.60	42.76		Very stiff orangish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of coal and sandstone.	
	0.50	HSV						
	0.60-1.50	D					Very stiff orangish brown and grey slightly sandy CLAY. Sand is fine to coarse.	
	1.50-1.90	D	1.50	41.86		Very stiff orangish brown and grey gravelly slightly sandy CLAY with rare boulders. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of sandstone. Boulders are angular to sub-rounded of sandstone up to 300mm in diameter.	2.0	
						1.90		41.46
						End of Trial Pit at 1.90m		
								3.0
								4.0
							5.0	

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 1.90m bgl due to reaching target depth.
4. Trial pit walls stable.
5. Location backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane



No.

TP119

Sheet 1 of 1

CO-ORDS: 347165E, 390217N

LEVEL: 43.25m OD

DATES: 28/01/25

Logged

Checked

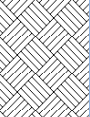
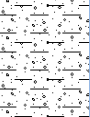
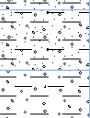
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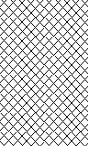
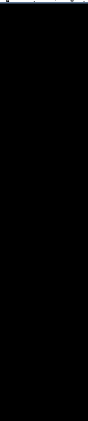
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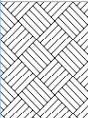
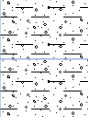
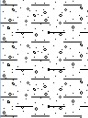
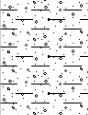
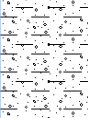
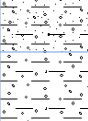
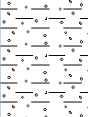
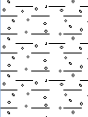
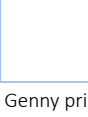
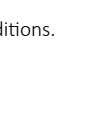
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.20	HSV	90kPa	0.30	42.95		TOPSOIL: Grass over stiff brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.	1.0
	0.30-0.50	ES	140kPa				Very stiff orangish brown slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of coal and sandstone.	
	0.40	HSV						
	0.50-1.60	D	0.50	42.75		Very stiff orangish brown and grey slightly sandy CLAY. Sand is fine to coarse.		
	1.00	HSV			140kPa		Weak orangish brown destructured SANDSTONE recovered as sandy GRAVEL with rare cobbles. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of sandstone. Cobbles are sub-angular to sub-rounded of sandstone up to 200mm in diameter.	
						2.00		
								2.0
								3.0
								4.0
								5.0

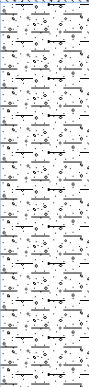
1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 2.00m bgl due to reaching target depth.
4. Trial pit walls stable.
5. Location backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

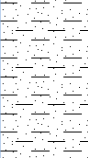
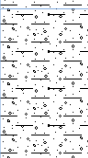
BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.
PROJECT NO: C5980						CO-ORDS: 347214E, 390229N		TP120
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 43.08m OD		Sheet 1 of 1
CLIENT: UNITED LIVING						DATES: 30/01/25		Hole Type
								TP
								Scale
								1:25
						Logged	Checked	
						MAS	PH	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.40	ES					TOPSOIL: Grass over firm brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone and coal.	
	0.30	HSV	75kPa					
	0.40-2.00	ES		0.40	42.68			
	0.70	HSV	140kPa				Very stiff orangish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal and mudstone.	
	1.50	HSV	140kPa					1.0
	2.00-2.50	D		2.00	41.08		Very stiff orangish brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of mudstone and coal.	2.0
	2.60	HSV	140kPa	2.50	40.58		Very stiff orangish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal and mudstone.	
	2.90-3.50	D		2.70	40.38		Very stiff black gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of coal, sandstone, and mudstone.	3.0
				2.90	40.18		Very stiff grey very gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of mudstone.	
				3.50	39.58	End of Trial Pit at 3.50m		
								4.0
								5.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Running sands encountered at 1.60m bgl. No other groundwater encountered. 3. Trial pit excavated to 3.50m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.					ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

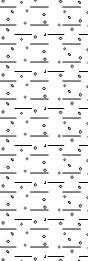
BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.
PROJECT NO: C5980						CO-ORDS: 347248E, 390242N		TP121
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 42.76m OD		Sheet 1 of 1
CLIENT: UNITED LIVING						DATES: 30/01/25		Hole Type
								TP
								Scale
								1:25
						Logged	Checked	
						MAS	PH	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.50	ES					MADE GROUND TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of brick.	
	0.30	HSV	35kPa					
	0.50-2.50	D		0.50	42.26		Stiff orangish brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal, mudstone, and sandstone.	
	0.90	HSV	140kPa				0.90m bgl: Becoming very stiff.	1.0
	2.00	HSV	140kPa				Black non-intact bituminous COAL.	
	2.50-3.90	D		2.50	40.26		2.60 - 3.50m bgl: Very stiff grey gravelly clay pockets encountered. Gravel is angular to sub-rounded fine to coarse of coal.	3.0
							3.50m bgl: Coal cobbles encountered. Cobbles are angular to sub-rounded up to 200mm in diameter.	
▼	3.90-4.00	D		3.90 4.00	38.86 38.76		Very weak grey destructured MUDSTONE with interbedded coal recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone and coal.	4.0
							End of Trial Pit at 4.00m	5.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Groundwater encountered at 3.90m bgl with small seepage. 3. Trial pit excavated to 4.00m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.					ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

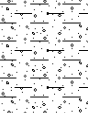
BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.		
PROJECT NO: C5980						CO-ORDS: 347281E, 390235N		TP122		
								Sheet 1 of 1		
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 42.97m OD		Hole Type		
								TP		
CLIENT: UNITED LIVING						DATES: 30/01/25		Scale		
								1:25		
								Logged	Checked	
								MAS	PH	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
	Depth (m)	Type	Results							
	0.10-0.40	ES	40kPa	0.40	42.57		TOPSOIL: Grass over soft brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone and coal.			1.0
	0.30	HSV								
	0.40-0.60	ES								
	0.50	HSV								
	0.60-2.20	D								
	0.80	HSV	140kPa	0.60	42.37		Stiff greyish orange slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone and coal.			
	Very stiff reddish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone and coal.									
1.50	HSV	140kPa	2.20	40.77		Stiff grey very gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of mudstone.			2.0	
2.20-3.30	D		3.30	39.67		End of Trial Pit at 3.30m			3.0	
									4.0	
									5.0	
										
										
										
										
										
										
										
										
										

 BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.							
								TP124							
								Sheet 1 of 1							
PROJECT NO: C5980						CO-ORDS: 347339E, 390245N				Hole Type					
										TP					
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 43.96m OD				Scale					
										1:25					
CLIENT: UNITED LIVING						DATES: 31/01/25				Logged	Checked				
										MAS	PH				
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description								
	Depth (m)	Type	Results												
	0.10-0.30	ES	70kPa	0.30	43.66		TOPSOIL: Grass over firm brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone and coal.			1.0					
	0.20	HSV													
	0.30-1.60	D													
	0.60	HSV	140kPa	1.60	42.36		Orangish brown and grey slightly gravelly slightly sandy CLAY with pockets of destructured coal. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal.				2.0				
	0.90	HSV	140kPa												
	1.50	HSV	140kPa												
	1.60-2.00	D	140kPa	2.00	41.96		Very weak grey destructured MUDSTONE recovered as slightly clayey GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.					3.0			
							End of Trial Pit at 2.00m						4.0		
														5.0	

Remarks	1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	
	2. No groundwater encountered.								
	3. Trial pit excavated to 2.00m bgl due to reaching target depth.								
	4. Trial pit walls stable.								
	5. Location backfilled with arisings upon completion.								

BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.			
PROJECT NO: C5980						CO-ORDS: 347109E, 390209N		TP125			
								Sheet 1 of 1			
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 43.38m OD		Hole Type			
								TP			
CLIENT: UNITED LIVING						DATES: 28/01/25		Scale			
								1:25			
								Logged	Checked		
								MAS	PH		
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description				
	Depth (m)	Type	Results								
	0.10-0.30	ES	50kPa	0.30	43.08		MADE GROUND TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of brick, sandstone, and coal.				
	0.20	HSV					0.30m bgl: Sandstone flagstones encountered in northern end of trial pit.				
	0.30-0.90	ES					Soft yellowish brown gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone, coal, and shale.				
	0.60	HSV	40kPa	0.90	42.48						
	0.90-2.30	D	140kPa				Very stiff brown slightly sandy CLAY with rare gravel. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal.				
	1.00	HSV									
	2.00	HSV	140kPa	2.30	41.08						
	2.30-2.60	D					Very stiff orangish brown and grey slightly sandy CLAY. Sand is fine to coarse.				
	2.60-2.80	D									
				2.60	40.78		Very weak orangish brown destructured SANDSTONE recovered as sandy GRAVEL. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.				
							End of Trial Pit at 2.80m				

BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.	
								TP126	
								Sheet 1 of 1	
PROJECT NO: C5980						CO-ORDS: 347155E, 390193N		Hole Type	
								TP	
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 43.41m OD		Scale	
								1:25	
CLIENT: UNITED LIVING						DATES: 28/01/25		Logged	Checked
								MAS	PH
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10-0.30	ES		0.30	43.11		TOPSOIL: Grass over firm brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.		
	0.20	HSV	50kPa				Very stiff reddish brown slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of coal.		
	0.30-1.20	ES							
	0.50	HSV	140kPa	1.20	42.21				
							Very weak orangish brown destructured SANDSTONE recovered as very sandy GRAVEL. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.		
	2.00-2.80	D		2.80	40.61		End of Trial Pit at 2.80m		
Remarks							1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. No groundwater encountered. 3. Trial pit excavated to 2.80m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.		
							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

 BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. TP127 Sheet 1 of 1	
PROJECT NO: C5980						CO-ORDS: 347196E, 390181N		Hole Type TP	
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 43.24m OD		Scale 1:25	
CLIENT: UNITED LIVING						DATES: 29/01/25		Logged MAS	Checked PH
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10-0.50	ES							
	0.30	HSV	36kPa						
				0.50	42.74		TOPSOIL: Grass over soft brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.		
				0.90	42.34		Yellowish brown clayey SAND with rare cobbles. Sand is fine to coarse. Cobbles are sub-angular to sub-rounded of sandstone up to 200mm in diameter.		
	0.90-2.15	D					Very weak orangish brown destructured SANDSTONE recovered as very sandy GRAVEL with low cobble content. Gravel is sub-angular to sub-rounded fine to coarse of sandstone. Cobbles are sub-angular to sub-rounded of sandstone up to 200mm in diameter.		
				2.15	41.09		End of Trial Pit at 2.15m		
Remarks 1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. No groundwater encountered. 3. Trial pit excavated to 2.15m bgl due to reaching target depth. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion. ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane									



No.

TP128

Sheet 1 of 1

CO-ORDS: 347197E, 390207N

LEVEL: 43.04m OD

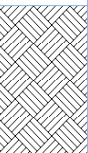
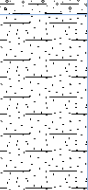
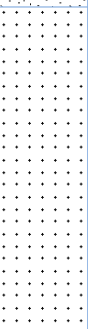
DATES: 29/01/25

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Checked

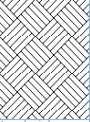
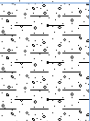
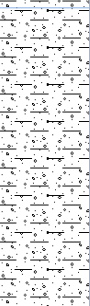
MAS

PH

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.50	ES	36kPa	0.50	42.54		TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.	1.0
	0.70	HSV		0.80	42.24		Firm orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of coal and sandstone.	
	0.80-1.40	D					Yellowish brown clayey SAND. Sand is fine to coarse.	
	1.50-2.50	D	1.40	41.64		Very weak orangish brown destructured SANDSTONE recovered as very sandy GRAVEL with low cobble content. Gravel is sub-angular to sub-rounded fine to coarse of sandstone. Cobbles are sub-angular to sub-rounded of sandstone up to 200mm in diameter.	2.0	
				2.50	40.54		End of Trial Pit at 2.50m	3.0
								4.0
								5.0

1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 2.50m bgl due to solid ground conditions.
4. Trial pit walls stable.
5. Location backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.
PROJECT NO: C5980						CO-ORDS: 347284E, 390209N		TP129
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 43.78m OD		Sheet 1 of 1
CLIENT: UNITED LIVING						DATES: 30/01/25		Hole Type
								TP
								Scale
								1:25
						Logged	Checked	
						MAS	PH	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.40	ES					TOPSOIL: Grass over soft brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone.	
	0.30	HSV	35kPa					
	0.40-0.60	D		0.40	43.38		Soft yellowish brown very sandy CLAY. Sand is fine to coarse.	
	0.60-2.50	D		0.60	43.18			
	0.60	HSV	140kPa				Very stiff reddish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone and coal.	1.0
	1.20	HSV	140kPa					
	2.00	HSV						2.0
	2.50-3.50	D		2.50	41.28			
	2.50	HSV	140kPa				Very stiff grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal.	3.0
	3.50-3.70	D		3.50	40.28		Black non-intact bituminous COAL.	
				3.70	40.08		End of Trial Pit at 3.70m	4.0
								5.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Running sands encountered at 1.40m bgl. No other groundwater encountered. 3. Trial pit excavated to 3.70m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.					ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	



No.

TP130

Sheet 1 of 1

CO-ORDS: 347313E, 390199N

LEVEL: 44.49m OD

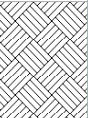
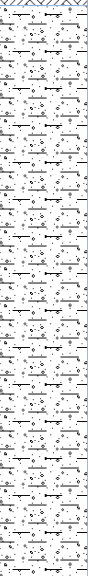
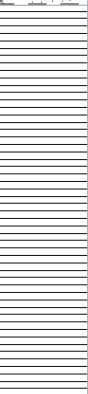
DATES: 30/01/25

Logged

Checked

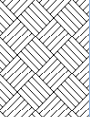
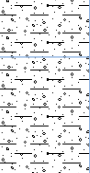
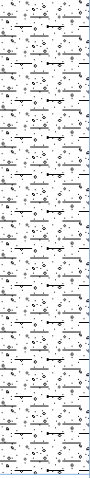
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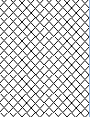
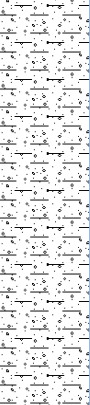
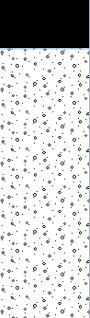
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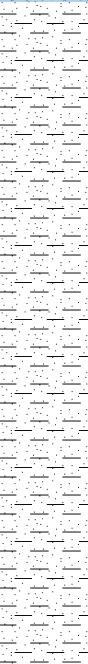
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.40	ES	35kPa 140kPa	0.40	44.09		TOPSOIL: Grass over soft brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone and coal.	1.0
	0.30	HSV						
	0.40-2.30	D						
	0.50	HSV						
	1.00	HSV	130kPa	2.30	42.19		Very stiff orangish brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal.	2.0
	2.20	HSV	140kPa					
	2.30-2.60	D						
				3.60	40.89		Very weak grey destructured MUDSTONE recovered as slightly clayey GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone. 2.30 - 2.50m bgl: With black angular to sub-rounded gravels of coal. 2.50m bgl: Mudstone cobbles and boulders encountered. Cobbles are sub-angular to sub-rounded up to 200mm in diameter. Boulders are sub-angular to sub-rounded up to 300mm in diameter.	3.0
							End of Trial Pit at 3.60m	4.0
								5.0

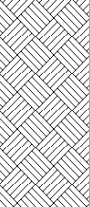
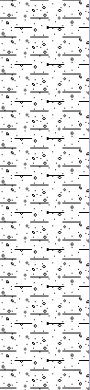
1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. No groundwater encountered.
3. Trial pit excavated to 3.60m bgl due to solid ground conditions.
4. Trial pit walls stable.
5. Location backfilled with arisings upon completion.

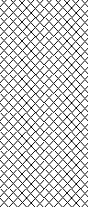
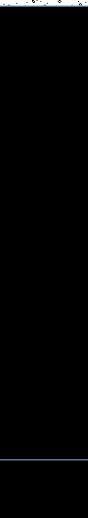
ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

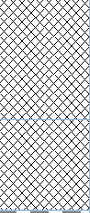
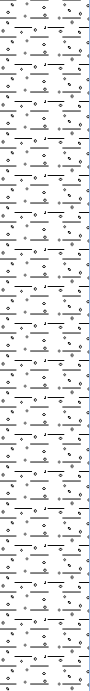
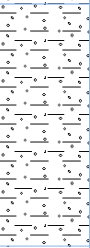
BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.
PROJECT NO: C5980						CO-ORDS: 347355E, 390177N		TP131
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 44.50m OD		Sheet 1 of 1
CLIENT: UNITED LIVING						DATES: 30/01/25		Hole Type
								TP
								Scale
								1:25
						Logged	Checked	
						MAS	PH	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.40	ES					TOPSOIL: Grass over firm brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of mudstone.	
	0.30	HSV	60kPa					
	0.40-0.60	ES		0.40	44.10			
	0.50	HSV	140kPa					
	0.60-1.60	D		0.60	43.90		Very stiff orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone and coal.	
							Very stiff orangish brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal.	
	1.00	HSV	140kPa					1.0
				1.60	42.90		Black non-intact bituminous COAL.	
	1.90-3.00	D		1.90	42.60		Orangish brown and grey slightly gravelly slightly sandy CLAY with pockets of destructured coal. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal.	2.0
	3.00-3.50	D						3.0
				3.50	41.00		End of Trial Pit at 3.50m	
								4.0
								5.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. No groundwater encountered. 3. Trial pit excavated to 3.50m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.					ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.
PROJECT NO: C5980						CO-ORDS: 347108E, 390165N		TP132
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 44.23m OD		Sheet 1 of 1
CLIENT: UNITED LIVING						DATES: 28/01/25		Hole Type
								TP
								Scale
								1:25
						Logged	Checked	
						MAS	PH	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.40	ES		0.40	43.83		MADE GROUND TOPSOIL: Grass over brown slightly gravelly slightly sandy clay with frequent roots. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of brick, mudstone, and quartz.	
	0.30	HSV	140kPa					
	0.40-1.80	ES						
	0.50	HSV	140kPa				Very stiff orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone.	
								1.0
	1.80-1.90	D		1.80	42.43		Very stiff black very gravelly CLAY. Gravel is angular to sub-rounded of coal.	
	1.80	HSV	140kPa	1.90	42.33			
	1.90-2.10	D					Black non-intact bituminous COAL.	
	2.10-3.00	D		2.10	42.13		2.00 - 2.10m bgl: With grey angular to sub-rounded gravels of mudstone.	
							Very weak grey destructured MUDSTONE recovered as slightly sandy GRAVEL. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone.	2.0
				3.00	41.23		End of Trial Pit at 3.00m	3.0
								4.0
								5.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. No groundwater encountered. 3. Trial pit excavated to 3.00m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.					ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. TP133 Sheet 1 of 1		
PROJECT NO: C5980						CO-ORDS: 347160E, 390155N		Hole Type TP		
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 43.85m OD		Scale 1:25		
CLIENT: UNITED LIVING						DATES: 28/01/25		Logged MAS	Checked PH	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
	Depth (m)	Type	Results							
	0.10-0.30	ES	50kPa	0.30	43.55		MADE GROUND TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of brick, sandstone, and coal.	1.0 2.0 3.0 4.0 5.0		
	0.20	HSV								
	0.30-0.60	ES								
	0.50	HSV	50kPa	0.60	43.25		Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse of coal, quartz, and sandstone.			
	0.60-1.90	D								
	0.80	HSV	120kPa				Very stiff orangish brown and grey slightly sandy CLAY. Sand is fine to coarse.			
		2.00-2.70	D			2.80	41.05			1.90m bgl: Becoming gravelly. Gravel is angular to sub-rounded fine to coarse of sandstone.
										2.30m bgl: Becoming gravelly. Gravel is angular to sub-rounded of coal and sandstone.
										End of Trial Pit at 2.80m
	Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Groundwater encountered at 2.00m bgl with small seepage. 3. Trial pit excavated to 2.80m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.
PROJECT NO: C5980						CO-ORDS: 347238E, 390150N		TP134
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 44.03m OD		Sheet 1 of 1
CLIENT: UNITED LIVING						DATES: 29/01/25		Hole Type
								TP
								Scale
								1:25
						Logged	Checked	
						MAS	PH	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.70	ES					TOPSOIL: Grass over stiff brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.	
	0.30	HSV	80kPa					
	0.70-2.00	D		0.70	43.33		Very stiff orangish brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and coal.	1.0
	2.00-2.60	D		2.00	42.03			2.0
				2.60	41.43		Very weak orangish brown destructured SANDSTONE recovered as sandy GRAVEL with low cobble content. Gravel is sub-angular to sub-rounded fine to coarse of sandstone. Cobbles are sub-angular to sub-rounded of sandstone up to 200mm in diameter.	
							End of Trial Pit at 2.60m	3.0
								4.0
								5.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. No groundwater encountered. 3. Trial pit excavated to 2.60m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.					ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.
								TP135
								Sheet 1 of 1
PROJECT NO: C5980						CO-ORDS: 347277E, 390148N		Hole Type
								TP
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 44.73m OD		Scale
								1:25
CLIENT: UNITED LIVING						DATES: 29/01/25		Logged
								Checked
								MAS
								PH
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.70 0.20	ES HSV	70kPa				MADE GROUND TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of brick, sandstone, and coal.	
	0.70-1.00 0.80	ES HSV	136kPa	0.70	44.03		Very stiff brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal.	
	1.00-2.50	D		1.00	43.73		Black non-intact sub-bituminous COAL.	1.0
	1.80	HSV	140kPa				1.60m bgl: Coal boulders encountered. Boulders are sub-angular to sub-rounded up to 500mm in diameter. 1.80 - 2.00m bgl: Very stiff grey clay pockets encountered.	2.0
	2.40 2.50-2.70	HSV D	140kPa	2.50	42.23		2.40 - 2.50m bgl: Very stiff brown clay pockets encountered.	
				2.70	42.03		Black non-intact bituminous COAL.	
							End of Trial Pit at 2.70m	3.0
								4.0
								5.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. No groundwater encountered. 3. Trial pit excavated to 2.70m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.					ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.
PROJECT NO: C5980						CO-ORDS: 347340E, 390145N		TP136
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 45.31m OD		Sheet 1 of 1
CLIENT: UNITED LIVING						DATES: 29/01/25		Hole Type
								TP
								Scale
								1:25
						Logged	Checked	
						MAS	PH	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10-0.40	ES					MADE GROUND TOPSOIL: Grass over brown slightly gravelly clay with frequent roots. Gravel is sub-angular to sub-rounded fine to coarse of brick and coal.	
	0.20	HSV	40kPa					
	0.40-0.70	ES		0.40	44.91		MADE GROUND: Brown slightly gravelly slightly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick and coal.	
	0.60	HSV	140kPa					
	0.70-3.00	D		0.70	44.61			
	1.00	HSV	140kPa				Very stiff orangish brown and brown slightly gravelly CLAY with pockets of destructured coal. Gravel is sub-angular to sub-rounded fine to coarse of coal, mudstone, and sandstone.	1.0
	3.00-3.80	D		3.00	42.31		Very stiff grey gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of mudstone.	3.0
				3.80	41.51	End of Trial Pit at 3.80m		4.0
								5.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. No groundwater encountered. 3. Trial pit excavated to 3.80m bgl due to solid ground conditions. 4. Trial pit walls stable. 5. Location backfilled with arisings upon completion.					ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	



Window Sampler No.

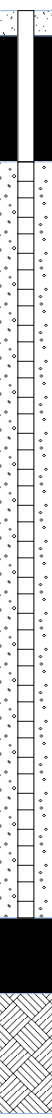
Sheet 1 of 1

CO-ORDS: 347047E, 390449N

LEVEL: 42.35m OD

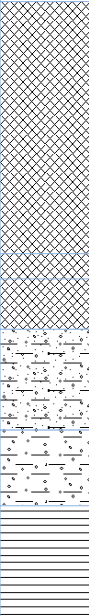
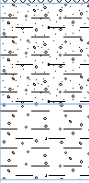
DATES: 04/02/25

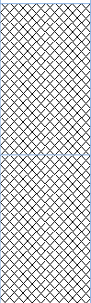
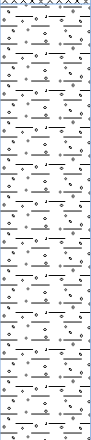
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MAS	PH

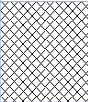
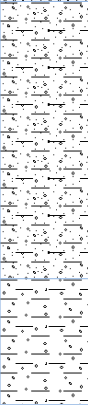
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.10-0.40	ES	60kPa	0.40	41.95		TOPSOIL: Grass over firm brown slightly gravelly slightly sandy clay with frequent roots. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of sandstone and coal.	1.0		
		0.30 0.40-1.70	HSV D								
		1.20	SPT	N=7 (1,1/2,1,2,2)	1.70	40.65		Soft orangish brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone, sandstone, and coal.	2.0		
		1.90-3.40 2.00	D SPT	N=10 (2,2/2,2,3,3)	1.90	40.45		Soft reddish brown very sandy CLAY. Sand is fine to coarse.			
		3.00	SPT	N=10 (1,2/2,2,3,3)	3.40 3.45	38.95 38.90		Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse of coal, mudstone, and sandstone.	3.0		
		4.00-4.38 4.00	D SPT	N≥50 (8,12/50 for 225mm)	3.90 4.00	38.45 38.35		Weak grey destructured MUDSTONE recovered as slightly clayey GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.			
		4.38							Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse of coal, mudstone, and sandstone.	4.0	
									Firm grey gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of mudstone and coal.		
									Weak grey destructured MUDSTONE recovered as slightly clayey GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.		
		End of Borehole at 4.38m									5.0
											6.0

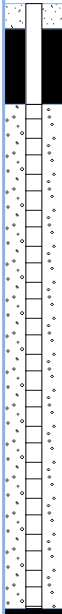
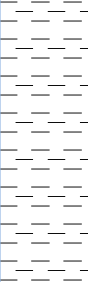
1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground.
2. Hand pit to 1.20m bgl to check for buried services.
3. No groundwater encountered.
4. Window sample terminated at 4.38m bgl due to refusal.
5. Installed to 3.60m bgl: 0.60m plain and 3.00m slotted PVC 35mm pipe.

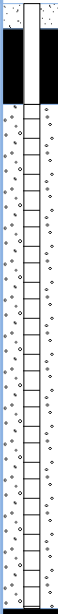
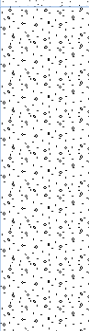
ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.			
									WS102			
									Sheet 1 of 1			
PROJECT NO: C5980							CO-ORDS: 347027E, 390338N		Hole Type			
									WS			
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 42.88m OD		Scale			
									1:30			
CLIENT: UNITED LIVING							DATES: 04/02/25		Logged			
									Checked			
									MAS			
									PH			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		0.10-1.00	ES					MADE GROUND TOPSOIL: Grass over blackish brown slightly sandy gravel with frequent roots. Gravel is angular to sub-rounded fine to coarse of coal, brick, sandstone, and mudstone. <i>0.10 - 1.00m bgl: Rare clinker cobbles encountered. Cobbles are angular fine to coarse up to 150mm in diameter.</i>	1.0			
					1.00	41.88						
					1.10	41.78						
		1.20	SPT	N=6 (1,1/1,1,2,2)	1.30	41.58			MADE GROUND: Brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal and mudstone.	2.0		
		1.30-1.70	D						MADE GROUND: Blackish grey slightly gravelly slightly sandy clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick, coal, and mudstone.			
		1.70-2.00	D		1.70	41.18			Soft brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal.			
		2.00-2.44	D		2.00	40.88			Soft brown and grey very gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of mudstone.	2.0		
		2.00	SPT	N≥50 (4,4/50 for 290mm)					Weak grey destructured MUDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.			
					2.44	40.44			End of Borehole at 2.44m			3.0
											5.0	
									6.0			

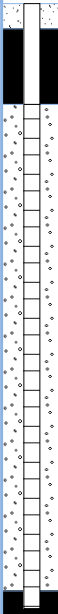
BROWNFIELD SOLUTIONS LTD						Borehole Log		Window Sampler No.		
								WS103		
								Sheet 1 of 1		
PROJECT NO: C5980						CO-ORDS: 346983E, 390284N		Hole Type		
								WS		
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 43.74m OD		Scale		
								1:30		
CLIENT: UNITED LIVING						DATES: 04/02/25		Logged	Checked	
								MAS	PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.10-0.60	ES					MADE GROUND TOPSOIL: Grass over blackish brown slightly sandy gravel with frequent roots. Gravel is angular to sub-rounded fine to coarse of coal, brick, sandstone, mudstone, and clinker.	1.0	
		0.60-1.20	ES		0.60	43.14		MADE GROUND: Grey slightly sandy gravelly clay. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of coal, brick, sandstone, mudstone, and clinker.		
		1.20-3.00 1.20	D SPT	N=6 (1,0/1,1,2,2)	1.20	42.54		Soft grey slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of coal and mudstone.	2.0	
		2.00	SPT	N=12 (1,1/1,2,4,5)				2.00m bgl: Becoming firm.		
		2.80	SPT	N≥50 (12,13/50 for 175mm)				2.80m bgl: Becoming very stiff.		
		3.00-3.12	D		3.00 3.12	40.74 40.62		Weak grey destructured MUDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.	3.0	
								End of Borehole at 3.12m		
									4.0	
									5.0	
									6.0	
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit to 1.20m bgl to check for buried services. 3. Groundwater encountered at 1.20m bgl. 4. Window sample terminated at 3.12m bgl due to refusal. 5. Installed to 3.00m bgl: 1.50m plain and 1.50m slotted PVC 35mm pipe.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.	
									WS104	
									Sheet 1 of 1	
PROJECT NO: C5980							CO-ORDS: 347063E, 390309N		Hole Type	
									WS	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.38m OD		Scale	
									1:30	
CLIENT: UNITED LIVING							DATES: 04/02/25		Logged	
									MAS	
									Checked	
									PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.10-0.40	ES					MADE GROUND TOPSOIL: Grass over brown slightly gravelly slightly sandy clay with frequent roots. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of brick, mudstone, and sandstone.		
		0.40-1.50	D		0.40	42.98			Soft orangish brown and grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of mudstone, sandstone, and coal.	
		1.20	SPT	N=11 (2,2/2,3,3,3)					1.20m bgl: Becoming firm.	
		1.50-2.00	D		1.50	41.88			Firm grey gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of mudstone, coal, and sandstone.	
		2.00	SPT	N≥50 (10,13/50 for 125mm)	2.00	41.38				Weak grey destructured MUDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.
			2.28	41.10	End of Borehole at 2.28m					
									3.0	
										4.0
									5.0	
										6.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit to 1.20m bgl to check for buried services. 3. No groundwater encountered. 4. Window sample terminated at 2.28m bgl due to refusal. 5. No install: backfilled with arisings.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Borehole Log			Window Sampler No. WS105 Sheet 1 of 1 Hole Type WS Scale 1:30 Logged Checked AH PH	
PROJECT NO: C5980							CO-ORDS: 347159E, 390240N				
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.40m OD				
CLIENT: UNITED LIVING							DATES: 03/02/25				
Well 	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.00-0.30	ES		0.30	43.10		TOPSOIL: Grass over soft dark brown slightly gravelly sandy clay with occasional rootlets. Sand is fine to coarse. Gravel is sub-angular to sub-angular fine to coarse of sandstone and mudstone.		1.0	
		0.50	D					Firm brown and grey CLAY.			
		1.20	SPT	N=15 (2,2/3,3,4,5)	1.50	41.90		Weak grey destructured MUDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.		2.0	
		1.60-1.80	D								
		2.00	SPT	N≥50 (8,9/50 for 295mm)	2.44	40.96		End of Borehole at 2.44m		3.0	
										4.0	
										5.0	
										6.0	
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit to 1.20m bgl to check for buried services. 3. No groundwater encountered. 4. Window sample terminated at 2.44m bgl due to refusal. 5. Installed to 2.40m bgl: 0.40m plain and 2.00m slotted PVC 35mm pipe.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

BROWNFIELD SOLUTIONS LTD						Borehole Log			Window Sampler No.	
									WS106	
									Sheet 1 of 1	
PROJECT NO: C5980						CO-ORDS: 347226E, 390209N			Hole Type	
									WS	
PROJECT NAME: HALSNEAD GARDENS						LEVEL: 43.84m OD			Scale	
									1:30	
CLIENT: UNITED LIVING						DATES: 03/02/25			Logged	Checked
									AH	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.00-0.30	ES					TOPSOIL: Grass over soft dark brown slightly gravelly sandy clay with occasional rootlets. Sand is fine to coarse. Gravel is sub-angular to sub-angular fine to coarse of sandstone and mudstone.		
		0.40	D		0.30	43.54		Firm orangish brown and grey slightly sandy CLAY. Sand is fine to coarse.		
		0.60			0.60	43.24		Light grey and brown gravelly SAND. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of sandstone, mudstone, and coal. <i>0.60 - 0.90m bgl: Becoming slightly clayey.</i>	1.0	
		0.90-1.20	D							
		1.20	SPT	N=13 (2,3/4,3,3,3)				<i>1.20m bgl: Becoming medium dense.</i>		
		2.00	SPT	N≥50 (6,9/50 for 285mm)	1.90	41.94		Weak grey destructured SANDSTONE recovered as sandy GRAVEL. Sand is fine to medium. Gravel is angular to sub-rounded fine to coarse of sandstone.	2.0	
					2.44	41.41		End of Borehole at 2.44m		
									3.0	
									4.0	
									5.0	
									6.0	
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit to 1.20m bgl to check for buried services. 3. No groundwater encountered. 4. Window sample terminated at 2.44m bgl due to refusal. 5. Installed to 2.40m bgl: 0.40m plain and 2.00m slotted PVC 35mm pipe.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

BROWNFIELD SOLUTIONS LTD							Borehole Log			Window Sampler No.	
										WS107	
										Sheet 1 of 1	
PROJECT NO: C5980							CO-ORDS: 347301E, 390221N			Hole Type	
										WS	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 43.83m OD			Scale	
										1:30	
CLIENT: UNITED LIVING							DATES: 03/02/25			Logged	Checked
										AH	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.40	D		0.30	43.53		TOPSOIL: Grass over soft dark brown slightly gravelly sandy clay with occasional rootlets. Sand is fine to coarse. Gravel is sub-angular to sub-angular fine to coarse of sandstone and mudstone. Soft brown and grey CLAY.		1.0	
		0.80-1.00	ES		0.70	43.13		Brown and grey slightly gravelly slightly clayey SAND. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.			
		1.20	SPT	N=9 (2,2/2,2,2,3)				1.20m bgl: Becoming loose.			
		2.00	SPT	N=26 (3,6/6,6,6,8)	1.60	42.23		Firm brown and grey CLAY.			
		2.10	D					2.00m bgl: Becoming stiff.			
								2.30 - 2.40m bgl: Pockets of brownish grey fine to coarse sand encountered.			
		2.80	SPT	N≥50 (5,8/50 for 295mm)	2.80	41.03		Weak grey destructured MUDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.			
					3.12	40.71		End of Borehole at 3.12m			
											
											
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit to 1.20m bgl to check for buried services. 3. No groundwater encountered. 4. Window sample terminated at 3.12m bgl due to refusal. 5. No install: backfilled with arisings.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.	
									WS108	
									Sheet 1 of 1	
PROJECT NO: C5980							CO-ORDS: 347330E, 390261N		Hole Type	
									WS	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 44.05m OD		Scale	
									1:30	
CLIENT: UNITED LIVING							DATES: 03/02/25		Logged	Checked
									AH	PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.00-0.30	ES		0.30	43.75		TOPSOIL: Grass over soft dark brown slightly gravelly sandy clay with occasional rootlets. Sand is fine to coarse. Gravel is sub-angular to sub-angular fine to coarse of sandstone and mudstone. Firm brown and grey CLAY.	1.0	
		0.40	D							
		1.20	SPT	N=10 (2,2/2,2,3,3)						
		1.50	D		1.90	42.15		Weak grey destructured MUDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.	2.0	
		2.00	SPT	N≥50 (4,7/50 for 275mm)						
					2.43	41.62		End of Borehole at 2.43m		
									3.0	
									4.0	
									5.0	
									6.0	
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit to 1.20m bgl to check for buried services. 3. No groundwater encountered. 4. Window sample terminated at 2.43m bgl due to refusal. 5. Installed to 2.40m bgl: 0.40m plain and 2.00m slotted PVC 35mm pipe.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	



Window Sampler No.

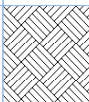
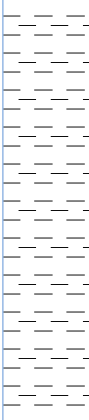
Sheet 1 of 1

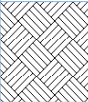
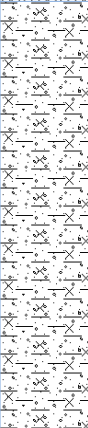
CO-ORDS: 347137E, 390167N

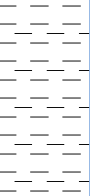
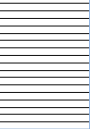
LEVEL: 43.68m OD

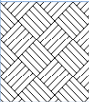
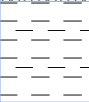
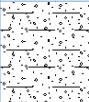
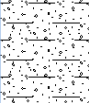
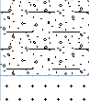
DATES: 03/02/25

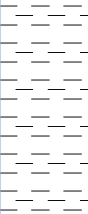
Logged	Checked
AH	PH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.00-0.40	ES		0.40	43.28		TOPSOIL: Grass over soft dark brown slightly gravelly sandy clay with occasional rootlets. Sand is fine to coarse. Gravel is sub-angular to sub-angular fine to coarse of sandstone and mudstone.	1.0		
		0.50	D					Firm brown and grey CLAY.			
		1.20	SPT					N=9 (2,2/2,2,2,3)		0.90 - 0.95m bgl: Band of grey fine to medium sand encountered.	
		1.50	D					1.10 - 1.15m bgl: Band of grey fine to medium sand encountered.			
		2.00	SPT					N≥50 (5,8/11,12,13,14)			
					2.10	41.58		Weak grey destructured MUDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.		2.0	
					2.45	41.23		End of Borehole at 2.45m		3.0	
											4.0
											5.0
											6.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit to 1.20m bgl to check for buried services. 3. No groundwater encountered. 4. Window sample terminated at 2.45m bgl due to refusal. 5. No install: backfilled with arisings.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane			

BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.
PROJECT NO: C5980							CO-ORDS: 347163E, 390166N		WS109A
									Sheet 1 of 1
PROJECT NAME: HALSNEAD GARDENS							LEVEL:		Hole Type
									WS
CLIENT: UNITED LIVING							DATES: 03/02/25		Scale
									1:30
							Logged	Checked	
							AH	PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00-0.40	ES		0.40			TOPSOIL: Grass over soft dark brown slightly gravelly sandy clay with occasional rootlets. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and mudstone.	
		0.60	D					Firm brown and grey mottled slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of mudstone and coal.	1.0
		1.20	SPT	N=14 (2,2/3,3,4,4)					
		1.50	D						
		2.00	SPT	N≥50 (3,4/50 for 220mm)	2.10			Weak grey destructured MUDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.	2.0
					2.37			End of Borehole at 2.37m	
									3.0
									4.0
									5.0
									6.0
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit to 1.20m bgl to check for buried services. 3. Groundwater encountered, at 2.00m bgl. 4. Window sample terminated at 2.37m bgl due to refusal. 5. No install: backfilled with arisings.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.
									WS110
									Sheet 1 of 1
PROJECT NO: C5980							CO-ORDS: 347195E, 390151N		Hole Type
									WS
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 44.13m OD		Scale
									1:30
CLIENT: UNITED LIVING							DATES: 03/02/25		Logged
									Checked
									AH PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00-0.40	ES					TOPSOIL: Grass over soft dark brown slightly gravelly sandy clay with occasional rootlets. Sand is fine to coarse. Gravel is sub-angular to sub-angular fine to coarse of sandstone and mudstone.	
					0.40	43.73		Brown and grey slightly gravelly clayey SAND. Sand is fine to coarse. Gravel is aub-angular to sub-rounded fine to medium of mudstone and coal.	
					0.60	43.53		Firm brown and grey CLAY.	
		1.20	SPT	N=15 (2,2/3,3,4,5)					
		2.00	SPT	N≥50 (2,4/50 for 275mm)	1.90	42.23		Weak grey destructured MUDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.	
					2.43	41.70		End of Borehole at 2.43m	
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit to 1.20m bgl to check for buried services. 3. Groundwater encountered, at 1.90m bgl. 4. Window sample terminated at 2.43m bgl due to refusal. 5. No install: backfilled with arisings.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.	
									WS111	
									Sheet 1 of 1	
PROJECT NO: C5980							CO-ORDS: 347251E, 390187N		Hole Type	
									WS	
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 44.54m OD		Scale	
									1:30	
CLIENT: UNITED LIVING							DATES: 03/02/25		Logged	
									Checked	
									AH	
									PH	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.10-0.30	D					TOPSOIL: Grass over soft dark brown slightly gravelly sandy clay with occasional rootlets. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and mudstone.		
		0.50	D		0.40	44.14		Firm brown and grey CLAY.		
		1.00-1.10	D		0.80	43.74		Grey slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of sandstone and mudstone.	1.0	
		1.20	SPT	N=10 (1,2/2,2,3,3)				1.20m bgl: Becoming loose.		
		2.00	SPT	N≥50 (12,12/50 for 205mm)	1.90	42.64		Weak grey destructured SANDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of sandstone.	2.0	
					2.36	42.19		End of Borehole at 2.36m		

BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.
									WS112
									Sheet 1 of 1
PROJECT NO: C5980							CO-ORDS: 347349E, 390216N		Hole Type
									WS
PROJECT NAME: HALSNEAD GARDENS							LEVEL: 44.49m OD		Scale
									1:30
CLIENT: UNITED LIVING							DATES: 03/02/25		Logged
									Checked
									AH
									PH
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00-0.30	ES		0.30	44.19		TOPSOIL: Grass over soft dark brown slightly gravelly sandy clay with occasional rootlets. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone and mudstone. Soft brown and grey CLAY.	
		0.50	D						
		1.20	SPT	N=7 (1,1/1,2,2,2)				Weak grey destructured MUDSTONE recovered as GRAVEL. Gravel is angular to sub-rounded fine to coarse of mudstone.	
		1.50	D						
		2.00	SPT	N=11 (1,2/2,2,3,4)	1.90	42.59		Black non-intact bituminous COAL.	
		2.10			2.10	42.39			
		2.50	D					End of Borehole at 3.44m	
		3.00	SPT	N≥50 (5,8/50 for 285mm)					
		3.44			3.44	41.06			
Remarks		1. Clearance of services using GPR techniques and CAT and Genny prior to breaking ground. 2. Hand pit to 1.20m bgl to check for buried services. 3. Groundwater encountered at 1.90m bgl. 4. Window sample terminated at 3.44m bgl due to refusal. 5. No install: backfilled with arisings.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane

APPENDIX C

Chemical Testing Results

Brownfield Solutions Ltd
William Smith House
173 - 183 Witton Street
Northwich
Cheshire
CW9 5LP

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Croxley Green
Business Park,
Watford,
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e: M.Sutterby@brownfield-solutions.co.uk

Analytical Report Number : 25-006103

Project / Site name:	Halsnead Gardens	Samples received on:	11/02/2025
Your job number:	C5980	Samples instructed on/ Analysis started on:	11/02/2025
Your order number:	6137_C5980_MAS	Analysis completed by:	14/02/2025
Report Issue Number:	1	Report issued on:	17/02/2025
Samples Analysed:	29 soil samples		

Signed:



Charlotte Andrew
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting
	air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-006103
Project / Site name: Halsnead Gardens
Your Order No: 6137_C5980_MAS

Lab Sample Number	448218	448219	448220	448221	448222
Sample Reference	TP101	TP103	TP106	TP107	TP112
Sample Number	ES	ES	D	ES	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.10-0.40	0.60-1.80	0.50-2.30	0.30-0.70	0.30-0.70
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	30.8	< 0.1
Moisture Content	%	0.01	NONE	20	17	18	12	14
Total mass of sample received	kg	0.1	NONE	0.8	0.8	1	0.7	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	-	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	-	-	-	KMC	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.2	5	9.9	7.4	8.2
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	0.39	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	16	30	2100	66	16
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	1070	33	7.74
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	7.81	14.7	-	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	41	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-	2100	-	-
Total Sulphur	%	0.005	MCERTS	-	-	0.208	-	-
Ammoniacal Nitrogen as NH ₄ ⁺	mg/kg	0.5	MCERTS	-	-	3.1	-	-
Ammonium as NH ₄ ⁺ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	0.2	-	-
Organic Matter (automated)	%	0.1	MCERTS	-	-	-	2	0.6
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	< 2.0	-	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	-	< 2.0	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	0.13	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	0.17	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	-	-	0.19	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	0.07	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	-	-	0.11	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	0.1	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	0.06	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	-	-	0.88	< 0.80
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Analytical Report Number: 25-006103
Project / Site name: Halsnead Gardens
Your Order No: 6137_C5980_MAS

Lab Sample Number	448218	448219	448220	448221	448222
Sample Reference	TP101	TP103	TP106	TP107	TP112
Sample Number	ES	ES	D	ES	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.10-0.40	0.60-1.80	0.50-2.30	0.30-0.70	0.30-0.70
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	9.4	9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	0.3	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	-	-	-	100	42
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	100	42
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	33	18
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	100	8.9
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	46	46
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	80	37
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	3.4	-	-
Magnesium (water soluble)	mg/kg	5	NONE	-	-	6.7	-	-

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	< 0.010	-
TPHCWG - Aliphatic >EC5 - EC10 HS_1D_AL	mg/kg	1	NONE	-	-	-	< 1.0	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	< 0.010	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	< 0.010	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	< 1.0	-
TPHCWG - Aliphatic >EC10 - EC16 EH_CU_1D_AL	mg/kg	3	NONE	-	-	-	< 3.0	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	< 2.0	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	< 8.0	-
TPHCWG - Aliphatic >EC16 - EC35 EH_CU_1D_AL	mg/kg	10	MCERTS	-	-	-	< 10	-
TPHCWG - Aliphatic >EC16 - EC40 EH_CU_1D_AL	mg/kg	10	NONE	-	-	-	< 10	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	< 8.0	-
TPHCWG - Aliphatic >EC35 - EC40 EH_CU_1D_AL	mg/kg	10	NONE	-	-	-	< 10	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	< 10	-
TPHCWG - Aliphatic >EC5 - EC40 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	< 10	-
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	< 0.010	-
TPHCWG - Aromatic >EC5 - EC10 HS_1D_AR	mg/kg	1	NONE	-	-	-	< 1.0	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	< 0.010	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-	-	-	< 0.020	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	< 1.0	-
TPHCWG - Aromatic >EC10 - EC16 EH_CU_1D_AR	mg/kg	3	NONE	-	-	-	< 3.0	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	< 2.0	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	< 10	-
TPHCWG - Aromatic >EC16 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	-	-	-	< 10	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	< 10	-
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	-	-	-	< 10	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	< 10	-
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	< 10	-
TPH Total >EC5 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	-	-	< 10	-

Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number				448218	448219	448220	448221	448222
Sample Reference				TP101	TP103	TP106	TP107	TP112
Sample Number				ES	ES	D	ES	ES
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.10-0.40	0.60-1.80	0.50-2.30	0.30-0.70	0.30-0.70
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

VOCs

MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	MCERTS	-	-	-	< 0.005	-
Benzene	mg/kg	0.005	MCERTS	-	-	-	< 0.005	-
Toluene	mg/kg	0.005	MCERTS	-	-	-	< 0.005	-
Ethylbenzene	mg/kg	0.005	MCERTS	-	-	-	< 0.005	-
p & m-xylene	mg/kg	0.008	MCERTS	-	-	-	< 0.008	-
o-Xylene	mg/kg	0.005	MCERTS	-	-	-	< 0.005	-

Total BTEX	mg/kg	0.01	NONE	-	-	-	< 0.010	-
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-006103
Project / Site name: Halsnead Gardens
Your Order No: 6137_C5980_MAS

Lab Sample Number	448223	448224	448225	448226	448227
Sample Reference	TP115	TP117	TP120	TP124	TP125
Sample Number	D	ES	ES	D	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.50-2.10	0.10-0.40	0.40-2.00	1.60-2.00	0.10-0.30
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	23	13	13	23
Total mass of sample received	kg	0.1	NONE	0.5	0.7	0.8	0.5	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	-	-	-	-	KMC

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6	6.4	7.9	5.5	6.1
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	-	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	12	13	40	12	13
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	6.13	6.39	-	-	6.36
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	-	-	19.8	6.09	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-	-	-	-
Total Sulphur	%	0.005	MCERTS	-	-	-	-	-
Ammoniacal Nitrogen as NH ₄ ⁺	mg/kg	0.5	MCERTS	-	-	-	-	-
Ammonium as NH ₄ ⁺ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	0.6	3.9	-	-	3.6
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	-	-	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	-	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	0.09
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	0.16
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	0.15
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	0.08
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	0.12
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	-	-	0.13
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	-	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	0.07
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	-	-	0.81
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Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number	448223	448224	448225	448226	448227
Sample Reference	TP115	TP117	TP120	TP124	TP125
Sample Number	D	ES	ES	D	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.50-2.10	0.10-0.40	0.40-2.00	1.60-2.00	0.10-0.30
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.9	11	-	-	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.7	-	-	0.8
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	-	-	< 1.8
Chromium (III)	mg/kg	1	NONE	33	22	-	-	19
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	23	-	-	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	9.7	55	-	-	48
Lead (aqua regia extractable)	mg/kg	1	MCERTS	7.7	34	-	-	62
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	18	-	-	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	28	61	-	-	71
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	-	-	-
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	-	-

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.01	MCERTS	-	-	-	-	< 0.010
TPHCWG - Aliphatic >EC5 - EC10 HS_ID_AL	mg/kg	1	NONE	-	-	-	-	< 1.0
TPHCWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.01	MCERTS	-	-	-	-	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.01	MCERTS	-	-	-	-	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPHCWG - Aliphatic >EC10 - EC16 EH_CU_ID_AL	mg/kg	3	NONE	-	-	-	-	< 3.0
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-	-	-	-	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	< 8.0
TPHCWG - Aliphatic >EC16 - EC35 EH_CU_ID_AL	mg/kg	10	MCERTS	-	-	-	-	< 10
TPHCWG - Aliphatic >EC16 - EC40 EH_CU_ID_AL	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 EH_CU_ID_AL	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aliphatic >EC5 - EC40 EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	-	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.01	MCERTS	-	-	-	-	< 0.010
TPHCWG - Aromatic >EC5 - EC10 HS_ID_AR	mg/kg	1	NONE	-	-	-	-	< 1.0
TPHCWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.01	MCERTS	-	-	-	-	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.02	MCERTS	-	-	-	-	< 0.020
TPHCWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPHCWG - Aromatic >EC10 - EC16 EH_CU_ID_AR	mg/kg	3	NONE	-	-	-	-	< 3.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	-	-	-	-	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	< 10
TPHCWG - Aromatic >EC16 - EC40 EH_CU_ID_AR	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	< 10
TPHCWG - Aromatic >EC35 - EC40 EH_CU_ID_AR	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-	-	-	< 10

TPH Total >EC5 - EC40 EH_CU+HS_ID_TOTAL	mg/kg	10	NONE	-	-	-	-	< 10
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Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number				448223	448224	448225	448226	448227
Sample Reference				TP115	TP117	TP120	TP124	TP125
Sample Number				D	ES	ES	D	ES
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.50-2.10	0.10-0.40	0.40-2.00	1.60-2.00	0.10-0.30
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

VOCs

MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	MCERTS	-	-	-	-	< 0.005
Benzene	mg/kg	0.005	MCERTS	-	-	-	-	< 0.005
Toluene	mg/kg	0.005	MCERTS	-	-	-	-	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	-	-	-	-	< 0.005
p & m-xylene	mg/kg	0.008	MCERTS	-	-	-	-	< 0.008
o-Xylene	mg/kg	0.005	MCERTS	-	-	-	-	< 0.005

Total BTEX	mg/kg	0.01	NONE	-	-	-	-	< 0.010
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-006103
Project / Site name: Halsnead Gardens
Your Order No: 6137_C5980_MAS

Lab Sample Number	448228	448229	448230	448231	448232
Sample Reference	TP126	TP127	TP130	TP131	TP133
Sample Number	D	D	D	D	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	1.20-2.80	0.90-2.15	0.40-2.30	0.60-1.60	0.10-0.30
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	42.5	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	15	15	15	21
Total mass of sample received	kg	0.1	NONE	0.5	0.5	0.5	0.5	0.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	-	-	-	-	KMC

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.5	6.3	6.1	8.3	6.9
Total Sulphate as SO ₄	%	0.005	MCERTS	-	0.007	0.008	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	3.7	5.5	10	9.6	12
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	2.74	4.99	-	6.1
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	1.87	-	-	4.79	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	1.4	1.1	-	-
Total Sulphur	mg/kg	50	MCERTS	-	< 50	65	-	-
Total Sulphur	%	0.005	MCERTS	-	< 0.005	0.006	-	-
Ammoniacal Nitrogen as NH ₄ ⁺	mg/kg	0.5	MCERTS	-	< 0.5	< 0.5	-	-
Ammonium as NH ₄ ⁺ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	< 0.05	< 0.05	-	-
Organic Matter (automated)	%	0.1	MCERTS	-	-	-	-	3.4
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	< 2.0	< 2.0	-	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	< 2.0	< 2.0	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	0.11
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	0.15
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	0.15
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	0.08
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	0.12
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-	0.12
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	0.06
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	-	-	-	< 0.80
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Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number	448228	448229	448230	448231	448232
Sample Reference	TP126	TP127	TP130	TP131	TP133
Sample Number	D	D	D	D	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	1.20-2.80	0.90-2.15	0.40-2.30	0.60-1.60	0.10-0.30
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	20
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	1.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	-	< 1.8
Chromium (III)	mg/kg	1	NONE	-	-	-	-	19
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	89
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	100
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	99

Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	< 2.5	4.4	-	-
Magnesium (water soluble)	mg/kg	5	NONE	-	< 5.0	8.8	-	-

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.01	MCERTS	-	-	-	-	< 0.010
TPHCWG - Aliphatic >EC5 - EC10 HS_ID_AL	mg/kg	1	NONE	-	-	-	-	< 1.0
TPHCWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.01	MCERTS	-	-	-	-	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.01	MCERTS	-	-	-	-	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPHCWG - Aliphatic >EC10 - EC16 EH_CU_ID_AL	mg/kg	3	NONE	-	-	-	-	< 3.0
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-	-	-	-	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	< 8.0
TPHCWG - Aliphatic >EC16 - EC35 EH_CU_ID_AL	mg/kg	10	MCERTS	-	-	-	-	< 10
TPHCWG - Aliphatic >EC16 - EC40 EH_CU_ID_AL	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 EH_CU_ID_AL	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aliphatic >EC5 - EC40 EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	-	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.01	MCERTS	-	-	-	-	< 0.010
TPHCWG - Aromatic >EC5 - EC10 HS_ID_AR	mg/kg	1	NONE	-	-	-	-	< 1.0
TPHCWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.01	MCERTS	-	-	-	-	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.02	MCERTS	-	-	-	-	< 0.020
TPHCWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPHCWG - Aromatic >EC10 - EC16 EH_CU_ID_AR	mg/kg	3	NONE	-	-	-	-	< 3.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	-	-	-	-	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	< 10
TPHCWG - Aromatic >EC16 - EC40 EH_CU_ID_AR	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	< 10
TPHCWG - Aromatic >EC35 - EC40 EH_CU_ID_AR	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-	-	-	< 10
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-	-	-	< 10

TPH Total >EC5 - EC40 EH_CU+HS_ID_TOTAL	mg/kg	10	NONE	-	-	-	-	< 10
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Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number				448228	448229	448230	448231	448232
Sample Reference				TP126	TP127	TP130	TP131	TP133
Sample Number				D	D	D	D	ES
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.20-2.80	0.90-2.15	0.40-2.30	0.60-1.60	0.10-0.30
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					

VOCs

MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	MCERTS	-	-	-	-	< 0.005
Benzene	mg/kg	0.005	MCERTS	-	-	-	-	< 0.005
Toluene	mg/kg	0.005	MCERTS	-	-	-	-	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	-	-	-	-	< 0.005
p & m-xylene	mg/kg	0.008	MCERTS	-	-	-	-	< 0.008
o-Xylene	mg/kg	0.005	MCERTS	-	-	-	-	< 0.005

Total BTEX	mg/kg	0.01	NONE	-	-	-	-	< 0.010
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-006103
Project / Site name: Halsnead Gardens
Your Order No: 6137_C5980_MAS

Lab Sample Number	448233	448234	448235	448236	448237
Sample Reference	TP135	WS101	WS102	WS103	WS103
Sample Number	ES	D	D	ES	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.10-0.70	0.40-1.70	2.00-2.45	0.10-0.60	0.60-1.20
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	30	15	8.2	18	18
Total mass of sample received	kg	0.1	NONE	0.7	0.5	0.5	0.7	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	-	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	KMC	-	-	KMC	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.4	8.6	7.3	6.8	7.3
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	-	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	20	8.3	35	65	240
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	9.94	-	-	32.4	121
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	-	4.16	17.7	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-	-	-	-
Total Sulphur	%	0.005	MCERTS	-	-	-	-	-
Ammoniacal Nitrogen as NH ₄ ⁺	mg/kg	0.5	MCERTS	-	-	-	-	-
Ammonium as NH ₄ ⁺ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	8.1	-	-	11	3.5
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	-	-	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	-	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	-	0.08	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.08	-	-	0.42	0.16
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	0.09	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.12	-	-	0.7	0.08
Pyrene	mg/kg	0.05	MCERTS	0.11	-	-	0.73	0.08
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	-	-	0.49	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.08	-	-	0.63	0.07
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.09	-	-	0.66	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	-	-	0.27	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	0.48	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	0.23	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	0.07	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	-	0.33	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	-	-	5.2	< 0.80
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Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number	448233	448234	448235	448236	448237
Sample Reference	TP135	WS101	WS102	WS103	WS103
Sample Number	ES	D	D	ES	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.10-0.70	0.40-1.70	2.00-2.45	0.10-0.60	0.60-1.20
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	-	-	39	26
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	-	-	< 0.2	1.9
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	-	-	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	18	-	-	19	20
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	-	-	20	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	47	-	-	160	52
Lead (aqua regia extractable)	mg/kg	1	MCERTS	47	-	-	980	65
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	-	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	-	-	110	43
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	63	-	-	130	340
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	-	-	-
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	-	-

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	-
TPHCWG - Aliphatic >EC5 - EC10 HS_1D_AL	mg/kg	1	NONE	< 1.0	-	-	< 1.0	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-
TPHCWG - Aliphatic >EC10 - EC16 EH_CU_1D_AL	mg/kg	3	NONE	< 3.0	-	-	< 3.0	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	-	-	< 8.0	-
TPHCWG - Aliphatic >EC16 - EC35 EH_CU_1D_AL	mg/kg	10	MCERTS	< 10	-	-	< 10	-
TPHCWG - Aliphatic >EC16 - EC40 EH_CU_1D_AL	mg/kg	10	NONE	< 10	-	-	< 10	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	-	-	< 8.0	-
TPHCWG - Aliphatic >EC35 - EC40 EH_CU_1D_AL	mg/kg	10	NONE	< 10	-	-	< 10	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	-	-	< 10	-
TPHCWG - Aliphatic >EC5 - EC40 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	-	-	< 10	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	-
TPHCWG - Aromatic >EC5 - EC10 HS_1D_AR	mg/kg	1	NONE	< 1.0	-	-	< 1.0	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	< 0.020	-	-	< 0.020	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-
TPHCWG - Aromatic >EC10 - EC16 EH_CU_1D_AR	mg/kg	3	NONE	< 3.0	-	-	< 3.0	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	-	-	< 10	-
TPHCWG - Aromatic >EC16 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	< 10	-	-	< 10	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	-	-	< 10	-
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	< 10	-	-	< 10	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	-	-	< 10	-
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	-	-	< 10	-

TPH Total >EC5 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	< 10	-	-	14	-
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Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number				448233	448234	448235	448236	448237
Sample Reference				TP135	WS101	WS102	WS103	WS103
Sample Number				ES	D	D	ES	ES
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.10-0.70	0.40-1.70	2.00-2.45	0.10-0.60	0.60-1.20
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

VOCs

MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	MCERTS	< 0.005	-	-	< 0.005	-
Benzene	mg/kg	0.005	MCERTS	< 0.005	-	-	< 0.005	-
Toluene	mg/kg	0.005	MCERTS	< 0.005	-	-	< 0.005	-
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	-	-	< 0.005	-
p & m-xylene	mg/kg	0.008	MCERTS	< 0.008	-	-	< 0.008	-
o-Xylene	mg/kg	0.005	MCERTS	< 0.005	-	-	< 0.005	-

Total BTEX	mg/kg	0.01	NONE	< 0.010	-	-	< 0.010	-
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-006103
Project / Site name: Halsnead Gardens
Your Order No: 6137_C5980_MAS

Lab Sample Number	448238	448239	448240	448241	448242
Sample Reference	WS105	WS107	WS108	WS109A	WS109A
Sample Number	ES	D	D	ES	D
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.00-0.30	0.80-1.00	1.50-1.50	0.00-0.50	0.60-0.60
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	11	17	20	16
Total mass of sample received	kg	0.1	NONE	0.8	0.5	0.5	0.7	0.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	-	-	-	-	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.8	6.4	7.2	6.5	7.9
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	0.016	-	0.012
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	7.6	5.7	38	44	9.5
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	3.79	-	19	21.9	4.77
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	-	2.87	-	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	1.7	-	1.7
Total Sulphur	mg/kg	50	MCERTS	-	-	84	-	59
Total Sulphur	%	0.005	MCERTS	-	-	0.008	-	0.006
Ammoniacal Nitrogen as NH ₄ ⁺	mg/kg	0.5	MCERTS	-	-	< 0.5	-	< 0.5
Ammonium as NH ₄ ⁺ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Organic Matter (automated)	%	0.1	MCERTS	3.3	-	-	3.3	-
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	< 2.0	-	< 2.0
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	-	< 2.0	-	< 2.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	0.05	-	-	0.09	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	0.08	-	-	0.11	-
Pyrene	mg/kg	0.05	MCERTS	0.08	-	-	0.1	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	0.06	-	-	0.09	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.07	-	-	0.07	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	-	-	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	-	-	< 0.80	-
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Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number	448238	448239	448240	448241	448242
Sample Reference	WS105	WS107	WS108	WS109A	WS109A
Sample Number	ES	D	D	ES	D
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.00-0.30	0.80-1.00	1.50-1.50	0.00-0.50	0.60-0.60
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	-	-	15	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.9	-	-	0.9	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	-	-	< 1.8	-
Chromium (III)	mg/kg	1	NONE	20	-	-	21	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	-	-	22	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	50	-	-	68	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	46	-	-	53	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	-	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	-	-	27	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	-	1.2	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	89	-	-	81	-

Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	2.6	-	< 2.5
Magnesium (water soluble)	mg/kg	5	NONE	-	-	5.2	-	< 5.0

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC10 HS_1D_AL	mg/kg	1	NONE	-	-	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC10 - EC16 EH_CU_1D_AL	mg/kg	3	NONE	-	-	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC35 EH_CU_1D_AL	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC40 EH_CU_1D_AL	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC35 - EC40 EH_CU_1D_AL	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC40 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC10 HS_1D_AR	mg/kg	1	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC16 EH_CU_1D_AR	mg/kg	3	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-

TPH Total >EC5 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	-	-	-	-
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Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number				448238	448239	448240	448241	448242
Sample Reference				WS105	WS107	WS108	WS109A	WS109A
Sample Number				ES	D	D	ES	D
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.00-0.30	0.80-1.00	1.50-1.50	0.00-0.50	0.60-0.60
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

VOCs

MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	MCERTS	-	-	-	-	-
Benzene	mg/kg	0.005	MCERTS	-	-	-	-	-
Toluene	mg/kg	0.005	MCERTS	-	-	-	-	-
Ethylbenzene	mg/kg	0.005	MCERTS	-	-	-	-	-
p & m-xylene	mg/kg	0.008	MCERTS	-	-	-	-	-
o-Xylene	mg/kg	0.005	MCERTS	-	-	-	-	-

Total BTEX	mg/kg	0.01	NONE	-	-	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-006103
Project / Site name: Halsnead Gardens
Your Order No: 6137_C5980_MAS

Lab Sample Number	448243	448244	448245	448246
Sample Reference	WS110	WS111	WS112	WS112
Sample Number	ES	D	D	D
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	0.00-0.40	0.50-0.50	0.50-0.50	1.50-1.50
Date Sampled	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	17	18	15
Total mass of sample received	kg	0.1	NONE	0.8	0.5	0.5	0.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	-	-	-	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.7	6.4	6.9	7.4
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	11	8.9	11	26
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	5.68	4.47	-	13
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	-	-	5.53	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-	-	-
Total Sulphur	%	0.005	MCERTS	-	-	-	-
Ammoniacal Nitrogen as NH ₄ ⁺	mg/kg	0.5	MCERTS	-	-	-	-
Ammonium as NH ₄ ⁺ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	2.6	1.3	-	0.8
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	-	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	-	< 0.80
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Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number	448243	448244	448245	448246
Sample Reference	WS110	WS111	WS112	WS112
Sample Number	ES	D	D	D
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	0.00-0.40	0.50-0.50	0.50-0.50	1.50-1.50
Date Sampled	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8	6.2	-	4.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.2	-	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	-	< 1.8
Chromium (III)	mg/kg	1	NONE	17	14	-	32
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	15	-	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	25	-	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	24	12	-	8.5
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	15	-	39
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	44	42	-	43

Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	-	-
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	-

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.01	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC10 HS_ID_AL	mg/kg	1	NONE	-	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.01	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.01	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC10 - EC16 EH_CU_ID_AL	mg/kg	3	NONE	-	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC35 EH_CU_ID_AL	mg/kg	10	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC40 EH_CU_ID_AL	mg/kg	10	NONE	-	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC35 - EC40 EH_CU_ID_AL	mg/kg	10	NONE	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC40 EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.01	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC5 - EC10 HS_ID_AR	mg/kg	1	NONE	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.01	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.02	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC10 - EC16 EH_CU_ID_AR	mg/kg	3	NONE	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC16 - EC40 EH_CU_ID_AR	mg/kg	10	NONE	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC35 - EC40 EH_CU_ID_AR	mg/kg	10	NONE	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-	-	-
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-	-	-

TPH Total >EC5 - EC40 EH_CU+HS_ID_TOTAL	mg/kg	10	NONE	-	-	-	-
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Analytical Report Number: 25-006103
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number				448243	448244	448245	448246
Sample Reference				WS110	WS111	WS112	WS112
Sample Number				ES	D	D	D
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				0.00-0.40	0.50-0.50	0.50-0.50	1.50-1.50
Date Sampled				Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status	

VOCs

MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	MCERTS	-	-	-	-
Benzene	mg/kg	0.005	MCERTS	-	-	-	-
Toluene	mg/kg	0.005	MCERTS	-	-	-	-
Ethylbenzene	mg/kg	0.005	MCERTS	-	-	-	-
p & m-xylene	mg/kg	0.008	MCERTS	-	-	-	-
o-Xylene	mg/kg	0.005	MCERTS	-	-	-	-

Total BTEX	mg/kg	0.01	NONE	-	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
448218	TP101	ES	0.10-0.40	Brown loam and clay with gravel and vegetation
448219	TP103	ES	0.60-1.80	Brown clay and sand
448220	TP106	D	0.50-2.30	Brown clay and sand with gravel
448221	TP107	ES	0.30-0.70	Brown loam and sand with gravel and vegetation
448222	TP112	ES	0.30-0.70	Brown clay and sand with gravel
448223	TP115	D	0.50-2.10	Brown clay and sand
448224	TP117	ES	0.10-0.40	Brown clay and loam with vegetation
448225	TP120	ES	0.40-2.00	Brown clay and sand
448226	TP124	D	1.60-2.00	Brown clay and sand
448227	TP125	ES	0.10-0.30	Brown clay and loam with vegetation
448228	TP126	D	1.20-2.80	Brown sand with gravel
448229	TP127	D	0.90-2.15	Brown clay and sand
448230	TP130	D	0.40-2.30	Brown clay and sand
448231	TP131	D	0.60-1.60	Brown clay and sand
448232	TP133	ES	0.10-0.30	Brown clay and loam with vegetation
448233	TP135	ES	0.10-0.70	Brown clay and loam with vegetation
448234	WS101	D	0.40-1.70	Brown clay
448235	WS102	D	2.00-2.45	Brown clay
448236	WS103	ES	0.10-0.60	Brown loam and sand with gravel and vegetation
448237	WS103	ES	0.60-1.20	Brown clay and loam with gravel and vegetation
448238	WS105	ES	0.00-0.30	Brown clay and loam with vegetation
448239	WS107	D	0.80-1.00	Brown clay and sand with vegetation
448240	WS108	D	1.50-1.50	Brown clay and sand with vegetation
448241	WS109A	ES	0.00-0.50	Brown clay and loam with gravel and vegetation
448242	WS109A	D	0.60-0.60	Brown clay and sand
448243	WS110	ES	0.00-0.40	Brown clay and loam with gravel and vegetation
448244	WS111	D	0.50-0.50	Brown clay and loam with gravel and vegetation
448245	WS112	D	0.50-0.50	Brown clay and loam with gravel and vegetation
448246	WS112	D	1.50-1.50	Brown clay

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Project / Site name: Halsnead Gardens

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Chromium III in soil	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080-PL/L130B	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS

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Project / Site name: Halsnead Gardens

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

Analytical Report Number : 25-006103

Project / Site name: Halsnead Gardens

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP101	ES	S	448218	a	Moisture Content	L019B	a
TP101	ES	S	448218	a	Sample preparation	L019B	a
TP101	ES	S	448218	a	Soil Descriptions	L019B	a
TP101	ES	S	448218	a	Stones content of soil	L019B	a
TP101	ES	S	448218	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP101	ES	S	448218	a	pH in soil (automated)	L099-PL	a
TP103	ES	S	448219	a	Moisture Content	L019B	a
TP103	ES	S	448219	a	Sample preparation	L019B	a
TP103	ES	S	448219	a	Soil Descriptions	L019B	a
TP103	ES	S	448219	a	Stones content of soil	L019B	a
TP103	ES	S	448219	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP103	ES	S	448219	a	pH in soil (automated)	L099-PL	a
TP106	D	S	448220	a	Ammonium as NH4 in soil	L082B	a
TP106	D	S	448220	a	Chloride, water soluble, in soil	L082B	a
TP106	D	S	448220	a	Magnesium, water soluble, in soil	L038B	a
TP106	D	S	448220	a	Moisture Content	L019B	a
TP106	D	S	448220	a	Sample preparation	L019B	a
TP106	D	S	448220	a	Soil Descriptions	L019B	a
TP106	D	S	448220	a	Stones content of soil	L019B	a
TP106	D	S	448220	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP106	D	S	448220	a	Total Sulphur in soil	L038B	a
TP106	D	S	448220	a	Total sulphate (as SO4 in soil)	L038B	a
TP106	D	S	448220	a	Water Soluble Nitrate (2:1) as N in soil	L078-PL	a
TP106	D	S	448220	a	pH in soil (automated)	L099-PL	a
TP107	ES	S	448221	a	Asbestos identification in Soil	A001B	a
TP107	ES	S	448221	a	Asbestos types if id positive	N/A	a
TP107	ES	S	448221	a	BTEX and/or Volatile organic compounds in soil	L073B	a
TP107	ES	S	448221	a	Chromium III in soil	L080-PL/L130B	a
TP107	ES	S	448221	a	Hexavalent chromium in soil	L080-PL	a
TP107	ES	S	448221	a	Metals in soil by ICP-OES	L038B	a
TP107	ES	S	448221	a	Moisture Content	L019B	a
TP107	ES	S	448221	a	Organic matter (Automated) in soil	L009B	a
TP107	ES	S	448221	a	Sample preparation	L019B	a
TP107	ES	S	448221	a	Soil Descriptions	L019B	a
TP107	ES	S	448221	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP107	ES	S	448221	a	Stones content of soil	L019B	a
TP107	ES	S	448221	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP107	ES	S	448221	a	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	a
TP107	ES	S	448221	a	pH in soil (automated)	L099-PL	a
TP112	ES	S	448222	a	Chromium III in soil	L080-PL/L130B	a
TP112	ES	S	448222	a	Hexavalent chromium in soil	L080-PL	a
TP112	ES	S	448222	a	Metals in soil by ICP-OES	L038B	a
TP112	ES	S	448222	a	Moisture Content	L019B	a
TP112	ES	S	448222	a	Organic matter (Automated) in soil	L009B	a
TP112	ES	S	448222	a	Sample preparation	L019B	a
TP112	ES	S	448222	a	Soil Descriptions	L019B	a
TP112	ES	S	448222	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP112	ES	S	448222	a	Stones content of soil	L019B	a
TP112	ES	S	448222	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP112	ES	S	448222	a	pH in soil (automated)	L099-PL	a
TP115	D	S	448223	ab	Chromium III in soil	L080-PL/L130B	a
TP115	D	S	448223	ab	Hexavalent chromium in soil	L080-PL	a
TP115	D	S	448223	ab	Metals in soil by ICP-OES	L038B	a
TP115	D	S	448223	ab	Moisture Content	L019B	a
TP115	D	S	448223	ab	Organic matter (Automated) in soil	L009B	a
TP115	D	S	448223	ab	Sample preparation	L019B	a
TP115	D	S	448223	ab	Soil Descriptions	L019B	a
TP115	D	S	448223	ab	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	ab

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Project / Site name: Halsnead Gardens

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP115	D	S	448223	ab	Stones content of soil	L019B	a
TP115	D	S	448223	ab	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP115	D	S	448223	ab	pH in soil (automated)	L099-PL	a
TP117	ES	S	448224	a	Chromium III in soil	L080-PL/L130B	a
TP117	ES	S	448224	a	Hexavalent chromium in soil	L080-PL	a
TP117	ES	S	448224	a	Metals in soil by ICP-OES	L038B	a
TP117	ES	S	448224	a	Moisture Content	L019B	a
TP117	ES	S	448224	a	Organic matter (Automated) in soil	L009B	a
TP117	ES	S	448224	a	Sample preparation	L019B	a
TP117	ES	S	448224	a	Soil Descriptions	L019B	a
TP117	ES	S	448224	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP117	ES	S	448224	a	Stones content of soil	L019B	a
TP117	ES	S	448224	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP117	ES	S	448224	a	pH in soil (automated)	L099-PL	a
TP120	ES	S	448225	a	Moisture Content	L019B	a
TP120	ES	S	448225	a	Sample preparation	L019B	a
TP120	ES	S	448225	a	Soil Descriptions	L019B	a
TP120	ES	S	448225	a	Stones content of soil	L019B	a
TP120	ES	S	448225	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP120	ES	S	448225	a	pH in soil (automated)	L099-PL	a
TP124	D	S	448226	a	Moisture Content	L019B	a
TP124	D	S	448226	a	Sample preparation	L019B	a
TP124	D	S	448226	a	Soil Descriptions	L019B	a
TP124	D	S	448226	a	Stones content of soil	L019B	a
TP124	D	S	448226	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP124	D	S	448226	a	pH in soil (automated)	L099-PL	a
TP125	ES	S	448227	a	Asbestos identification in Soil	A001B	a
TP125	ES	S	448227	a	Asbestos types if id positive	N/A	a
TP125	ES	S	448227	a	BTEX and/or Volatile organic compounds in soil	L073B	a
TP125	ES	S	448227	a	Chromium III in soil	L080-PL/L130B	a
TP125	ES	S	448227	a	Hexavalent chromium in soil	L080-PL	a
TP125	ES	S	448227	a	Metals in soil by ICP-OES	L038B	a
TP125	ES	S	448227	a	Moisture Content	L019B	a
TP125	ES	S	448227	a	Organic matter (Automated) in soil	L009B	a
TP125	ES	S	448227	a	Sample preparation	L019B	a
TP125	ES	S	448227	a	Soil Descriptions	L019B	a
TP125	ES	S	448227	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP125	ES	S	448227	a	Stones content of soil	L019B	a
TP125	ES	S	448227	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP125	ES	S	448227	a	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	a
TP125	ES	S	448227	a	pH in soil (automated)	L099-PL	a
TP126	D	S	448228	a	Moisture Content	L019B	a
TP126	D	S	448228	a	Sample preparation	L019B	a
TP126	D	S	448228	a	Soil Descriptions	L019B	a
TP126	D	S	448228	a	Stones content of soil	L019B	a
TP126	D	S	448228	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP126	D	S	448228	a	pH in soil (automated)	L099-PL	a
TP127	D	S	448229	a	Ammonium as NH4 in soil	L082B	a
TP127	D	S	448229	a	Chloride, water soluble, in soil	L082B	a
TP127	D	S	448229	a	Magnesium, water soluble, in soil	L038B	a
TP127	D	S	448229	a	Moisture Content	L019B	a
TP127	D	S	448229	a	Sample preparation	L019B	a
TP127	D	S	448229	a	Soil Descriptions	L019B	a
TP127	D	S	448229	a	Stones content of soil	L019B	a
TP127	D	S	448229	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP127	D	S	448229	a	Total Sulphur in soil	L038B	a
TP127	D	S	448229	a	Total sulphate (as SO4 in soil)	L038B	a
TP127	D	S	448229	a	Water Soluble Nitrate (2:1) as N in soil	L078-PL	a

Analytical Report Number : 25-006103

Project / Site name: Halsnead Gardens

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP127	D	S	448229	a	pH in soil (automated)	L099-PL	a
TP130	D	S	448230	a	Ammonium as NH4 in soil	L082B	a
TP130	D	S	448230	a	Chloride, water soluble, in soil	L082B	a
TP130	D	S	448230	a	Magnesium, water soluble, in soil	L038B	a
TP130	D	S	448230	a	Moisture Content	L019B	a
TP130	D	S	448230	a	Sample preparation	L019B	a
TP130	D	S	448230	a	Soil Descriptions	L019B	a
TP130	D	S	448230	a	Stones content of soil	L019B	a
TP130	D	S	448230	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP130	D	S	448230	a	Total Sulphur in soil	L038B	a
TP130	D	S	448230	a	Total sulphate (as SO4 in soil)	L038B	a
TP130	D	S	448230	a	Water Soluble Nitrate (2:1) as N in soil	L078-PL	a
TP130	D	S	448230	a	pH in soil (automated)	L099-PL	a
TP131	D	S	448231	a	Moisture Content	L019B	a
TP131	D	S	448231	a	Sample preparation	L019B	a
TP131	D	S	448231	a	Soil Descriptions	L019B	a
TP131	D	S	448231	a	Stones content of soil	L019B	a
TP131	D	S	448231	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP131	D	S	448231	a	pH in soil (automated)	L099-PL	a
TP133	ES	S	448232	a	Asbestos identification in Soil	A001B	a
TP133	ES	S	448232	a	Asbestos types if id positive	N/A	a
TP133	ES	S	448232	a	BTEX and/or Volatile organic compounds in soil	L073B	a
TP133	ES	S	448232	a	Chromium III in soil	L080-PL/L130B	a
TP133	ES	S	448232	a	Hexavalent chromium in soil	L080-PL	a
TP133	ES	S	448232	a	Metals in soil by ICP-OES	L038B	a
TP133	ES	S	448232	a	Moisture Content	L019B	a
TP133	ES	S	448232	a	Organic matter (Automated) in soil	L009B	a
TP133	ES	S	448232	a	Sample preparation	L019B	a
TP133	ES	S	448232	a	Soil Descriptions	L019B	a
TP133	ES	S	448232	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP133	ES	S	448232	a	Stones content of soil	L019B	a
TP133	ES	S	448232	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP133	ES	S	448232	a	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	a
TP133	ES	S	448232	a	pH in soil (automated)	L099-PL	a
TP135	ES	S	448233	a	Asbestos identification in Soil	A001B	a
TP135	ES	S	448233	a	Asbestos types if id positive	N/A	a
TP135	ES	S	448233	a	BTEX and/or Volatile organic compounds in soil	L073B	a
TP135	ES	S	448233	a	Chromium III in soil	L080-PL/L130B	a
TP135	ES	S	448233	a	Hexavalent chromium in soil	L080-PL	a
TP135	ES	S	448233	a	Metals in soil by ICP-OES	L038B	a
TP135	ES	S	448233	a	Moisture Content	L019B	a
TP135	ES	S	448233	a	Organic matter (Automated) in soil	L009B	a
TP135	ES	S	448233	a	Sample preparation	L019B	a
TP135	ES	S	448233	a	Soil Descriptions	L019B	a
TP135	ES	S	448233	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP135	ES	S	448233	a	Stones content of soil	L019B	a
TP135	ES	S	448233	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP135	ES	S	448233	a	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	a
TP135	ES	S	448233	a	pH in soil (automated)	L099-PL	a
WS101	D	S	448234	a	Moisture Content	L019B	a
WS101	D	S	448234	a	Sample preparation	L019B	a
WS101	D	S	448234	a	Soil Descriptions	L019B	a
WS101	D	S	448234	a	Stones content of soil	L019B	a
WS101	D	S	448234	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS101	D	S	448234	a	pH in soil (automated)	L099-PL	a
WS102	D	S	448235	a	Moisture Content	L019B	a
WS102	D	S	448235	a	Sample preparation	L019B	a
WS102	D	S	448235	a	Soil Descriptions	L019B	a

Analytical Report Number : 25-006103

Project / Site name: Halsnead Gardens

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS102	D	S	448235	a	Stones content of soil	L019B	a
WS102	D	S	448235	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS102	D	S	448235	a	pH in soil (automated)	L099-PL	a
WS103	ES	S	448236	a	Asbestos identification in Soil	A001B	a
WS103	ES	S	448236	a	Asbestos types if id positive	N/A	a
WS103	ES	S	448236	a	BTEX and/or Volatile organic compounds in soil	L073B	a
WS103	ES	S	448236	a	Chromium III in soil	L080-PL/L130B	a
WS103	ES	S	448236	a	Hexavalent chromium in soil	L080-PL	a
WS103	ES	S	448236	a	Metals in soil by ICP-OES	L038B	a
WS103	ES	S	448236	a	Moisture Content	L019B	a
WS103	ES	S	448236	a	Organic matter (Automated) in soil	L009B	a
WS103	ES	S	448236	a	Sample preparation	L019B	a
WS103	ES	S	448236	a	Soil Descriptions	L019B	a
WS103	ES	S	448236	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
WS103	ES	S	448236	a	Stones content of soil	L019B	a
WS103	ES	S	448236	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS103	ES	S	448236	a	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	a
WS103	ES	S	448236	a	pH in soil (automated)	L099-PL	a
WS103	ES	S	448237	a	Chromium III in soil	L080-PL/L130B	a
WS103	ES	S	448237	a	Hexavalent chromium in soil	L080-PL	a
WS103	ES	S	448237	a	Metals in soil by ICP-OES	L038B	a
WS103	ES	S	448237	a	Moisture Content	L019B	a
WS103	ES	S	448237	a	Organic matter (Automated) in soil	L009B	a
WS103	ES	S	448237	a	Sample preparation	L019B	a
WS103	ES	S	448237	a	Soil Descriptions	L019B	a
WS103	ES	S	448237	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
WS103	ES	S	448237	a	Stones content of soil	L019B	a
WS103	ES	S	448237	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS103	ES	S	448237	a	pH in soil (automated)	L099-PL	a
WS105	ES	S	448238	a	Chromium III in soil	L080-PL/L130B	a
WS105	ES	S	448238	a	Hexavalent chromium in soil	L080-PL	a
WS105	ES	S	448238	a	Metals in soil by ICP-OES	L038B	a
WS105	ES	S	448238	a	Moisture Content	L019B	a
WS105	ES	S	448238	a	Organic matter (Automated) in soil	L009B	a
WS105	ES	S	448238	a	Sample preparation	L019B	a
WS105	ES	S	448238	a	Soil Descriptions	L019B	a
WS105	ES	S	448238	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
WS105	ES	S	448238	a	Stones content of soil	L019B	a
WS105	ES	S	448238	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS105	ES	S	448238	a	pH in soil (automated)	L099-PL	a
WS107	D	S	448239	a	Moisture Content	L019B	a
WS107	D	S	448239	a	Sample preparation	L019B	a
WS107	D	S	448239	a	Soil Descriptions	L019B	a
WS107	D	S	448239	a	Stones content of soil	L019B	a
WS107	D	S	448239	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS107	D	S	448239	a	pH in soil (automated)	L099-PL	a
WS108	D	S	448240	a	Ammonium as NH4 in soil	L082B	a
WS108	D	S	448240	a	Chloride, water soluble, in soil	L082B	a
WS108	D	S	448240	a	Magnesium, water soluble, in soil	L038B	a
WS108	D	S	448240	a	Moisture Content	L019B	a
WS108	D	S	448240	a	Sample preparation	L019B	a
WS108	D	S	448240	a	Soil Descriptions	L019B	a
WS108	D	S	448240	a	Stones content of soil	L019B	a
WS108	D	S	448240	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS108	D	S	448240	a	Total Sulphur in soil	L038B	a
WS108	D	S	448240	a	Total sulphate (as SO4 in soil)	L038B	a
WS108	D	S	448240	a	Water Soluble Nitrate (2:1) as N in soil	L078-PL	a
WS108	D	S	448240	a	pH in soil (automated)	L099-PL	a

Analytical Report Number : 25-006103

Project / Site name: Halsnead Gardens

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS109A	D	S	448242	a	Ammonium as NH4 in soil	L082B	a
WS109A	D	S	448242	a	Chloride, water soluble, in soil	L082B	a
WS109A	D	S	448242	a	Magnesium, water soluble, in soil	L038B	a
WS109A	D	S	448242	a	Moisture Content	L019B	a
WS109A	D	S	448242	a	Sample preparation	L019B	a
WS109A	D	S	448242	a	Soil Descriptions	L019B	a
WS109A	D	S	448242	a	Stones content of soil	L019B	a
WS109A	D	S	448242	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS109A	D	S	448242	a	Total Sulphur in soil	L038B	a
WS109A	D	S	448242	a	Total sulphate (as SO4 in soil)	L038B	a
WS109A	D	S	448242	a	Water Soluble Nitrate (2:1) as N in soil	L078-PL	a
WS109A	D	S	448242	a	pH in soil (automated)	L099-PL	a
WS109A	ES	S	448241	a	Chromium III in soil	L080-PL/L130B	a
WS109A	ES	S	448241	a	Hexavalent chromium in soil	L080-PL	a
WS109A	ES	S	448241	a	Metals in soil by ICP-OES	L038B	a
WS109A	ES	S	448241	a	Moisture Content	L019B	a
WS109A	ES	S	448241	a	Organic matter (Automated) in soil	L009B	a
WS109A	ES	S	448241	a	Sample preparation	L019B	a
WS109A	ES	S	448241	a	Soil Descriptions	L019B	a
WS109A	ES	S	448241	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
WS109A	ES	S	448241	a	Stones content of soil	L019B	a
WS109A	ES	S	448241	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS109A	ES	S	448241	a	pH in soil (automated)	L099-PL	a
WS110	ES	S	448243	a	Chromium III in soil	L080-PL/L130B	a
WS110	ES	S	448243	a	Hexavalent chromium in soil	L080-PL	a
WS110	ES	S	448243	a	Metals in soil by ICP-OES	L038B	a
WS110	ES	S	448243	a	Moisture Content	L019B	a
WS110	ES	S	448243	a	Organic matter (Automated) in soil	L009B	a
WS110	ES	S	448243	a	Sample preparation	L019B	a
WS110	ES	S	448243	a	Soil Descriptions	L019B	a
WS110	ES	S	448243	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
WS110	ES	S	448243	a	Stones content of soil	L019B	a
WS110	ES	S	448243	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS110	ES	S	448243	a	pH in soil (automated)	L099-PL	a
WS111	D	S	448244	ab	Chromium III in soil	L080-PL/L130B	a
WS111	D	S	448244	ab	Hexavalent chromium in soil	L080-PL	a
WS111	D	S	448244	ab	Metals in soil by ICP-OES	L038B	a
WS111	D	S	448244	ab	Moisture Content	L019B	a
WS111	D	S	448244	ab	Organic matter (Automated) in soil	L009B	a
WS111	D	S	448244	ab	Sample preparation	L019B	a
WS111	D	S	448244	ab	Soil Descriptions	L019B	a
WS111	D	S	448244	ab	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	ab
WS111	D	S	448244	ab	Stones content of soil	L019B	a
WS111	D	S	448244	ab	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS111	D	S	448244	ab	pH in soil (automated)	L099-PL	a
WS112	D	S	448245	a	Moisture Content	L019B	a
WS112	D	S	448245	a	Sample preparation	L019B	a
WS112	D	S	448245	a	Soil Descriptions	L019B	a
WS112	D	S	448245	a	Stones content of soil	L019B	a
WS112	D	S	448245	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS112	D	S	448245	a	pH in soil (automated)	L099-PL	a
WS112	D	S	448246	ab	Chromium III in soil	L080-PL/L130B	a
WS112	D	S	448246	ab	Hexavalent chromium in soil	L080-PL	a
WS112	D	S	448246	ab	Metals in soil by ICP-OES	L038B	a
WS112	D	S	448246	ab	Moisture Content	L019B	a
WS112	D	S	448246	ab	Organic matter (Automated) in soil	L009B	a
WS112	D	S	448246	ab	Sample preparation	L019B	a
WS112	D	S	448246	ab	Soil Descriptions	L019B	a



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Sample Deviation Report



Analytical Report Number : 25-006103

Project / Site name: Halsnead Gardens

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS112	D	S	448246	ab	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	ab
WS112	D	S	448246	ab	Stones content of soil	L019B	a
WS112	D	S	448246	ab	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS112	D	S	448246	ab	pH in soil (automated)	L099-PL	a



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Analytical Report Number : 25-006339

Project / Site name: Halsnead Gardens

Samples received on: 10/02/2025

Your job number: C5980

**Samples instructed on/
Analysis started on:** 11/02/2025

Your order number: 6137 C5980 MAS

Analysis completed by: 17/02/2025

Report Issue Number: 1

Report issued on: 17/02/2025

Samples Analysed: 1 soil sample

Signed:

Caterina Bentley
Customer Service Advisor
For & on behalf of i2 Analytical Ltd.

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

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

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

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting
air - once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-006339
Project / Site name: Halsnead Gardens
Your Order No: 6137 C5980 MAS

Lab Sample Number				449319
Sample Reference				WS01
Sample Number				ES
Water Matrix				N/A
Depth (m)				0.10-0.40
Date Sampled				Deviating
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	18
Total mass of sample received	kg	0.1	NONE	0.8

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.3
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1000
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	510
Organic Matter (automated)	%	0.1	MCERTS	6.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.16
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.35
Pyrene	mg/kg	0.05	MCERTS	0.34
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.17
Chrysene	mg/kg	0.05	MCERTS	0.25
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.26
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.11
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.22
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.11
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.12

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	2.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	21
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (III)	mg/kg	1	NONE	21
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	87
Lead (aqua regia extractable)	mg/kg	1	MCERTS	99
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 25-006339
Project / Site name: Halsnead Gardens

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
449319	WS01	ES	0.10-0.40	Brown loam with vegetation

Analytical Report Number : 25-006339
Project / Site name: Halsnead Gardens

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
Chromium III in soil	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080-PL/L130B	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C. Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

Analytical Report Number : 25-006339
Project / Site name: Halsnead Gardens

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS01	ES	S	449319	a	Chromium III in soil	L080-PL/L130B	a
WS01	ES	S	449319	a	Hexavalent chromium in soil	L080-PL	a
WS01	ES	S	449319	a	Metals in soil by ICP-OES	L038B	a
WS01	ES	S	449319	a	Moisture Content	L019B	a
WS01	ES	S	449319	a	Organic matter (Automated) in soil	L009B	a
WS01	ES	S	449319	a	Sample preparation	L019B	a
WS01	ES	S	449319	a	Soil Descriptions	L019B	a
WS01	ES	S	449319	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
WS01	ES	S	449319	a	Stones content of soil	L019B	a
WS01	ES	S	449319	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
WS01	ES	S	449319	a	pH in soil (automated)	L099-PL	a

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Analytical Report Number : 25-007197

Project / Site name:	Halsnead Phase 1	Samples received on:	17/02/2025
Your job number:	C5980	Samples instructed on/ Analysis started on:	17/02/2025
Your order number:	C5980 6162 JM	Analysis completed by:	20/02/2025
Report Issue Number:	1	Report issued on:	20/02/2025
Samples Analysed:	2 soil samples		


Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-007197
 Project / Site name: Halsnead Phase 1
 Your Order No: C5980 6162 JM

Lab Sample Number				453915	453916
Sample Reference				MS03	MS06
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				5.50	2.30
Date Sampled				12/02/2025	12/02/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	22	20
Total mass of sample received	kg	0.1	NONE	0.5	0.6

General Inorganics

Loss on Ignition @ 450°C	%	0.2	MCERTS	30	22
Calorific Value	MJ/Kg	0.12	ISO 17025	9.92	8.53

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-007197

Project / Site name: Halsnead Phase 1

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
453915	MS03	None Supplied	5.5	Black clay and sand with gravel
453916	MS06	None Supplied	2.3	Brown clay and sand with gravel

Analytical Report Number : 25-007197

Project / Site name: Halsnead Phase 1

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Calorific Value of soil	Determination of the calorific value of soil by combustion in a controlled environment	Calorific Value of Soil by Bomb Calorimeter	L013B	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047-PL	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

Human Health Assessment Summary - Soils Test Data			Soil Type: Location: Depth:			TP101 0.10-0.40	TP103 0.60-1.80	TP106 0.50-2.30	TP107 0.30-0.70	TP112 0.30-0.70	TP115 0.50-2.10	TP117 0.10-0.40	TP120 0.40-2.00	TP124 1.60-2.00	TP125 0.10-0.30	TP126 1.20-2.80	TP127 0.90-2.15	TP130 0.40-2.30	TP131 0.60-1.60	TP133 0.10-0.30	TP135 0.10-0.70	WS101 0.40-1.70	WS102 2.00-2.45	WS103 0.10-0.60	WS103 0.60-1.20	WS105 0.00-0.30	WS107 0.80-1.00	WS108 1.50-1.50	WS109A 0.00-0.50	WS109A 0.60-0.60	WS110 0.00-0.40
Contaminant	GAC (mg/kg)	No. Samples	Min. Value	Max. Value	No. Samples ≥GAC																										
Moisture Content	-	34	8.20	30.00	-	20	17	18	12	14	15	23	13	13	23	11	15	15	15	21	30	15	8	18	18	18	11	17	20	16	20
Soil Organic Matter	-	30	0.60	11.00	-				2.0	0.6	0.6	3.9			3.6				3.4	8.1			11.0	3.5	3.3			3.3			2.6
pH	-	32	5.00	9.90	-	6.2	5.0	9.9	7.4	8.2	6.0	6.4	7.9	5.5	6.1	7.5	6.3	6.1	8.3	6.9	6.4	8.6	7.3	6.8	7.3	7.8	6.4	7.2	6.5	7.9	6.7
Water Soluble Sulphate (2:1 Leachate Equivalent) (mg/l)	Note mg/l	30	2.74	1070.00	-			1070.0	33.0	7.7	6.1	6.4			6.4		2.7	5.0		6.1	9.9			32.4	121.0	3.8		19.0	21.9	4.8	5.7
Arsenic	37	30	4.60	39.00	1				9.4	9.0	7.9	11.0			11.0				20.0	14.0			39.0	26.0	13.0			15.0			8.0
Cadmium	11	30	< LOD	1.90	0				0.3	< 0.2	< 0.2	0.7			0.8				1.3	0.8			< 0.2	1.9	0.9			0.9			0.4
Chromium (III)	910	30	14.00	100.00	0				100.0	42.0	33.0	22.0			19.0				19.0	18.0			19.0	20.0	20.0			21.0			17.0
Hexavalent Chromium (VI)	6	15	0.00	<LOD	0				<1.8	<1.8	<1.8	<1.8			<1.8				<1.8	<1.8			<1.8	<1.8	<1.8			<1.8			<1.8
Copper	2400	30	9.70	160.00	0				33.0	18.0	9.7	55.0			48.0				89.0	47.0			160.0	52.0	50.0			68.0			31.0
Lead	200	30	7.70	980.00	1				100.0	8.9	7.7	34.0			62.0				100.0	47.0			980.0	65.0	46.0			53.0			24.0
Mercury	1.2	30	< LOD	0.50	0				< 0.3	< 0.3	< 0.3	< 0.3			< 0.3				< 0.3	< 0.3			< 0.3	< 0.3	< 0.3			< 0.3			< 0.3
Nickel	130	30	13.00	110.00	0				46.0	46.0	18.0	18.0			19.0				20.0	16.0			110.0	43.0	19.0			27.0			13.0
Selenium	250	30	< LOD	120.00	0				< 1.0	< 1.0	< 1.0	< 1.0			< 1.0				< 1.0	< 1.0			< 1.0	< 1.0	< 1.0			1.2			< 1.0
Zinc	3700	29	28.00	340.00	0				80.0	37.0	28.0	61.0			71.0				99.0	63.0			130.0	340.0	89.0			81.0			44.0
Cyanide (free)	34	0	0.00	<LOD	0																										
Phenol (total)	120	0	0.00	<LOD	0																										
Naphthalene	2.3	32	< LOD	0.08	0				< 0.05	< 0.05	< 0.05	< 0.05			< 0.05				< 0.05	< 0.05			0.08	< 0.05	< 0.05			< 0.05			< 0.05
Acenaphthylene	170	32	< LOD	0.00	0				< 0.05	< 0.05	< 0.05	< 0.05			< 0.05				< 0.05	< 0.05			< 0.05	< 0.05	< 0.05			< 0.05			< 0.05
Acenaphthene	210	32	< LOD	0.00	0				< 0.05	< 0.05	< 0.05	< 0.05			< 0.05				< 0.05	< 0.05			< 0.05	< 0.05	< 0.05			< 0.05			< 0.05
Fluorene	170	32	< LOD	0.00	0				< 0.05	< 0.05	< 0.05	< 0.05			< 0.05				< 0.05	< 0.05			< 0.05	< 0.05	< 0.05			< 0.05			< 0.05
Phenanthrene	95	32	< LOD	0.42	0				0.13	< 0.05	< 0.05	< 0.05			0.09				0.11	0.08			0.42	0.16	0.05			0.09			< 0.05
Anthracene	2400	32	< LOD	0.09	0				< 0.05	< 0.05	< 0.05	< 0.05			< 0.05				< 0.05	< 0.05			0.09	< 0.05	< 0.05			< 0.05			< 0.05
Fluoranthene	280	32	< LOD	0.70	0				0.17	< 0.05	< 0.05	< 0.05			0.16				0.15	0.12			0.70	0.08	0.08			0.11			< 0.05
Pyrene	620	32	< LOD	0.73	0				0.19	< 0.05	< 0.05	< 0.05			0.15				0.15	0.11			0.73	0.08	0.08			0.10			< 0.05
Benzo(a)anthracene	7	32	< LOD	0.49	0				0.07	< 0.05	< 0.05	< 0.05			0.08				0.08	0.07			0.49	< 0.05	< 0.05			< 0.05			< 0.05
Chrysene	15	32	< LOD	0.63	0				0.11	< 0.05	< 0.05	< 0.05			0.12				0.12	0.08			0.63	0.07	0.06			0.09			< 0.05
Benzo(b)fluoranthene	2.6	32	< LOD	0.66	0				0.10	< 0.05	< 0.05	< 0.05			0.13				0.12	0.09			0.66	< 0.05	0.07			0.07			< 0.05
Benzo(k)fluoranthene	77	32	< LOD	0.27	0				< 0.05	< 0.05	< 0.05	< 0.05			< 0.05				< 0.05	< 0.05			0.27	< 0.05	< 0.05			< 0.05			< 0.05
Benzo(a)pyrene	2.2	32	< LOD	0.48	0				< 0.05	< 0.05	< 0.05	< 0.05			0.07				0.06	< 0.05			0.48	< 0.05	< 0.05			< 0.05			< 0.05
Indeno(1,2,3-cd)pyrene	27	32	< LOD	0.23	0				0.05	< 0.05	< 0.05	< 0.05			< 0.05				< 0.05	< 0.05			0.23	< 0.05	< 0.05			< 0.05			< 0.05
Dibenz(a,h)anthracene	0.24	32	< LOD	0.07	0				< 0.05	< 0.05	< 0.05	< 0.05			< 0.05				< 0.05	< 0.05			0.07	< 0.05	< 0.05			< 0.05			< 0.05
Benzo(ghi)perylene	320	32	< LOD	0.33	0				0.06	< 0.05	< 0.05	< 0.05			< 0.05				< 0.05	< 0.05			0.33	< 0.05	< 0.05			< 0.05			< 0.05
Asbestos Detected (Detected or Not-Detected)	Y	29	0.00	0.00	0				Not-detected					Not-detected					Not-detected					Not-detected							
Asbestos Quantification (% w/w)	0.001	0	0.00	<LOD	0																</										

Human Health Assessment Summary - Soils Test Data			Soil Type: Location: Depth:			WS111 0.50-0.50	WS112 0.50-0.50	WS112 1.50-1.50	TP135 0.10-0.70	WS109A 0.00-0.50	WS01 0.10-0.40	MS03 5.5	MS06 2.3
Contaminant	GAC (mg/kg)	No. Samples	Min. Value	Max. Value	No. Samples ≥GAC								
Moisture Content	-	34	8.20	30.00	-	17	18	15	30	20	18	22	20
Soil Organic Matter	-	30	0.60	11.00	-	1.3		0.8			6.2		
pH	-	32	5.00	9.90	-	6.4	6.9	7.4	6.4	7.7	6.3		
Water Soluble Sulphate (2:1 Leachate Equivalent) (mg/l)	Note mg/l	30	2.74	1070.00	-	4.5		13.0			510.0		
Arsenic	37	30	4.60	39.00	1	6.2		4.6			21.0		
Cadmium	11	30	< LOD	1.90	0	0.2		< 0.2			1.4		
Chromium (III)	910	30	14.00	100.00	0	14.0		32.0			21.0		
Hexavalent Chromium (VI)	6	15	0.00	<LOD	0	<1.8		<1.8			<1.8		
Copper	2400	30	9.70	160.00	0	25.0		19.0			87.0		
Lead	200	30	7.70	980.00	1	12.0		8.5			99.0		
Mercury	1.2	30	< LOD	0.50	0	< 0.3		< 0.3			0.5		
Nickel	130	30	13.00	110.00	0	15.0		39.0			28.0		
Selenium	250	30	< LOD	120.00	0	< 1.0		< 1.0			120.0		
Zinc	3700	29	28.00	340.00	0	42.0		43.0					
Cyanide (free)	34	0	0.00	<LOD	0								
Phenol (total)	120	0	0.00	<LOD	0								
Naphthalene	2.3	32	< LOD	0.08	0	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05		
Acenaphthylene	170	32	< LOD	0.00	0	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05		
Acenaphthene	210	32	< LOD	0.00	0	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05		
Fluorene	170	32	< LOD	0.00	0	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05		
Phenanthrene	95	32	< LOD	0.42	0	< 0.05		< 0.05	0.08	0.09	0.16		
Anthracene	2400	32	< LOD	0.09	0	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05		
Fluoranthene	280	32	< LOD	0.70	0	< 0.05		< 0.05	0.12	0.11	0.35		
Pyrene	620	32	< LOD	0.73	0	< 0.05		< 0.05	0.11	0.10	0.34		
Benzo(a)anthracene	7	32	< LOD	0.49	0	< 0.05		< 0.05	0.07	< 0.05	0.17		
Chrysene	15	32	< LOD	0.63	0	< 0.05		< 0.05	0.08	0.09	0.25		
Benzo(b)fluoranthene	2.6	32	< LOD	0.66	0	< 0.05		< 0.05	0.09	0.07	0.26		
Benzo(k)fluoranthene	77	32	< LOD	0.27	0	< 0.05		< 0.05	< 0.05	< 0.05	0.11		
Benzo(a)pyrene	2.2	32	< LOD	0.48	0	< 0.05		< 0.05	< 0.05	< 0.05	0.22		
Indeno(1,2,3-cd)pyrene	27	32	< LOD	0.23	0	< 0.05		< 0.05	< 0.05	< 0.05	0.11		
Dibenz(a,h)anthracene	0.24	32	< LOD	0.07	0	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05		
Benzo(ghi)perylene	320	32	< LOD	0.33	0	< 0.05		< 0.05	< 0.05	< 0.05	0.12		
Asbestos Detected (Detected or Not-Detected)	Y	29	0.00	0.00	0								
Asbestos Quantification (% w/w)	0.001	0	0.00	<LOD	0								
Petroleum Hydrocarbons Aliphatic >EC5-EC6	42	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aliphatic >EC6-EC8	100	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aliphatic >EC8-EC10	27	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aliphatic >EC10-EC12	130	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aliphatic >EC12-EC16	1100	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aliphatic >EC16-EC35	65000	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aliphatic >EC35-EC40	65000	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aromatic >EC5-EC7	70	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aromatic >EC7-EC8	130	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aromatic >EC8-EC10	34	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aromatic >EC10-EC12	74	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aromatic >EC12-EC16	140	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aromatic >EC16-EC21	260	5	< LOD	<LOD	0								
Petroleum Hydrocarbons Aromatic >EC21-EC35	1100	5	< LOD	14.00	0								
Petroleum Hydrocarbons Aromatic >EC35-EC40	1100	5	< LOD	<LOD	0								
Benzene	0.09	22	< LOD	0.00	0				< 5.0	< 5.0			
Toluene	130	28	< LOD	0.00	0				< 5.0	< 5.0			
Ethyl benzene	47	31	< LOD	0.00	0				< 5.0	< 5.0			
o-Xylene	60	31	< LOD	0.00	0				< 8.0	< 8.0			
m- & p-Xylene	115	31	< LOD	0.00	0				< 5.0	< 5.0			
MTBE	49	29	< LOD	0.00	0								
Chloroethene (Vinyl Chloride)	0.00064	0	0.00	<LOD	0								
1,2-Dichloroethane (1,2-DCA)	0.007	0	0.00	<LOD	0								
1,1,1-Trichloroethane	8.8	0	0.00	<LOD	0								
1,1,2,2-Tetrachloroethane	1.6	0	0.00	<LOD	0								
1,1,1,2-Tetrachloroethane	1.2	0	0.00	<LOD	0								
Tetrachloroethene (PCE)	0.18	0	0.00	<LOD	0								
Tetrachloromethane (carbon tetrachloride)	0.026	0	0.00	<LOD	0								
Trichloroethene (TCE)	0.016	0	0.00	<LOD	0								
Trichloromethane (chloroform)	0.91	0	0.00	<LOD	0								
Chlorobenzene	0.45	0	0.00	<LOD	0								
1, 2 Dichlorobenzene	23	0	0.00	<LOD	0								
1, 3 Dichlorobenzene	0.40	0	0.00	<LOD	0								
1, 4 Dichlorobenzene	61	0	0.00	<LOD	0								
1, 2, 3 Trichlorobenzene	1.50	0	0.00	<LOD	0								
1, 2, 4 Trichlorobenzene	2.60	0	0.00	<LOD	0								
1, 3, 5 Trichlorobenzene	0.33	0	0.00	<LOD	0								
1, 2, 3, 4 Tetrachlorobenzene	15	0	0.00	<LOD	0								
1, 2, 3, 5 Tetrachlorobenzene	0.66	0	0.00	<LOD	0								
1, 2, 4, 5 Tetrachlorobenzene	0.33	0	0.00	<LOD	0								
Pentachlorobenzene	5.8	0	0.00	<LOD	0								
Hexachlorobenzene	1.8	0	0.00	<LOD	0								
Hexachlorobutadiene	0.29	0	0.00	<LOD	0								
ADD CoC	0.0	0	0.00	<LOD	0								
ADD CoC	0.0	0	0.00	<LOD	0								
Mean Average SOM						3.6							
Mean Average pH						7.0							
Residential with Homegrown Produce 1% SOM													
Job Number: C5980													
Client: United Living													
Site: Halsnead Gardens, Prescot													
Soil Group Type Combined Results													

APPENDIX D

Geotechnical Testing Results



TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022,
cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Brownfield Solutions Ltd
Client Address: William Smith House, 173 - 183 Witton Street,
Northwich, Cheshire,
CW9 5LP
Contact: Maeve Sutterby
Site Address: Halsnead Gardens

Client Reference: C5980
Job Number: 25-006245-1
Date Sampled: Not Given
Date Received: 11/02/2025
Date Tested: 17/02/2025
Sampled By: Client - MAS

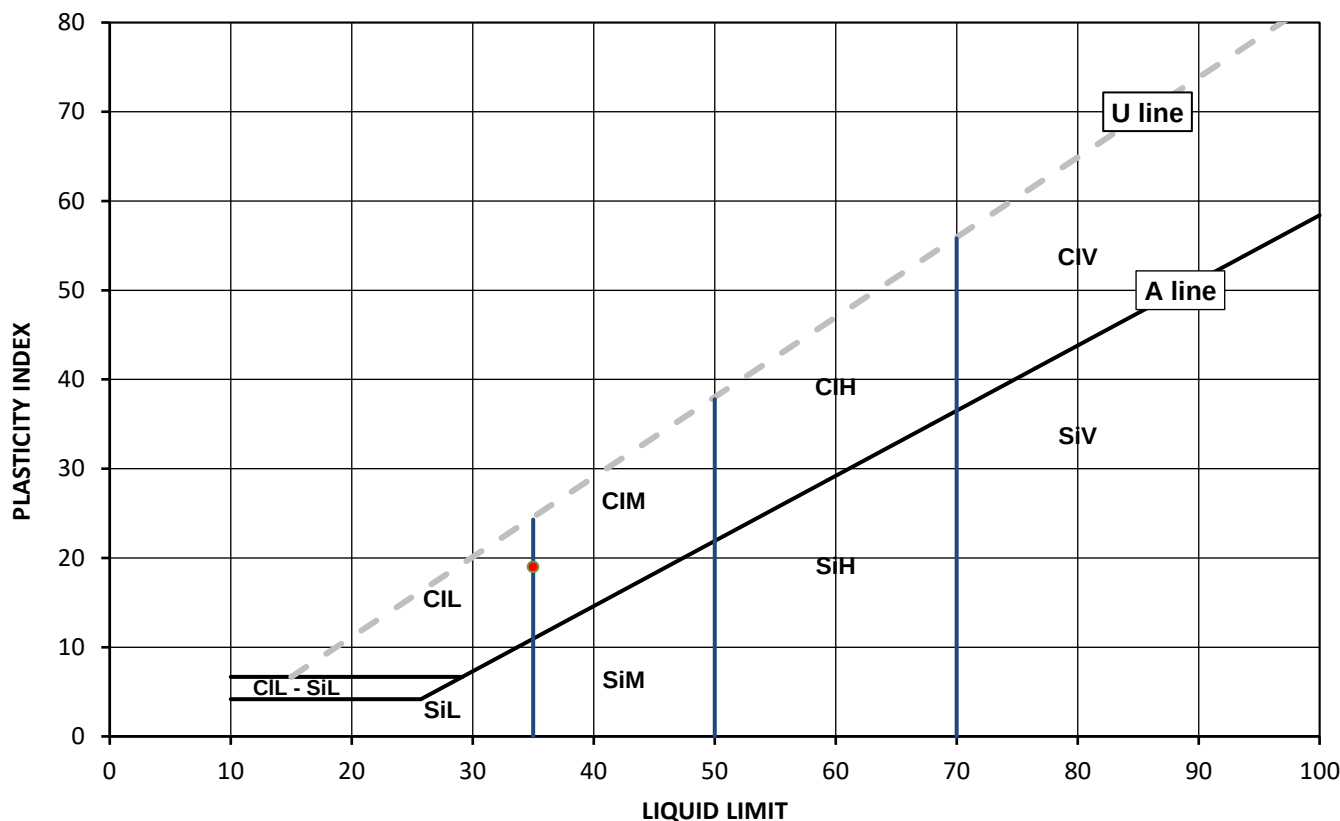
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 448939
Hole No.: TP101
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY
Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

Depth Top [m]: 0.40
Depth Base [m]: 2.10
Sample Type: D

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
19.8	35	1.030	16	19	0.21	0.79	85



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	
	V Very high	
	O Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed:

Monika Siewior

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022,
cl 5.3, 6

i2 Analytical Ltd
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Northampton NN4 7EB



Environmental Science

4041

Client: Brownfield Solutions Ltd
Client Address: William Smith House, 173 - 183 Witton Street,
Northwich, Cheshire,
CW9 5LP
Contact: Maeve Sutterby
Site Address: Halsnead Gardens

Client Reference: C5980
Job Number: 25-006245-1
Date Sampled: Not Given
Date Received: 11/02/2025
Date Tested: 17/02/2025
Sampled By: Client - MAS

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

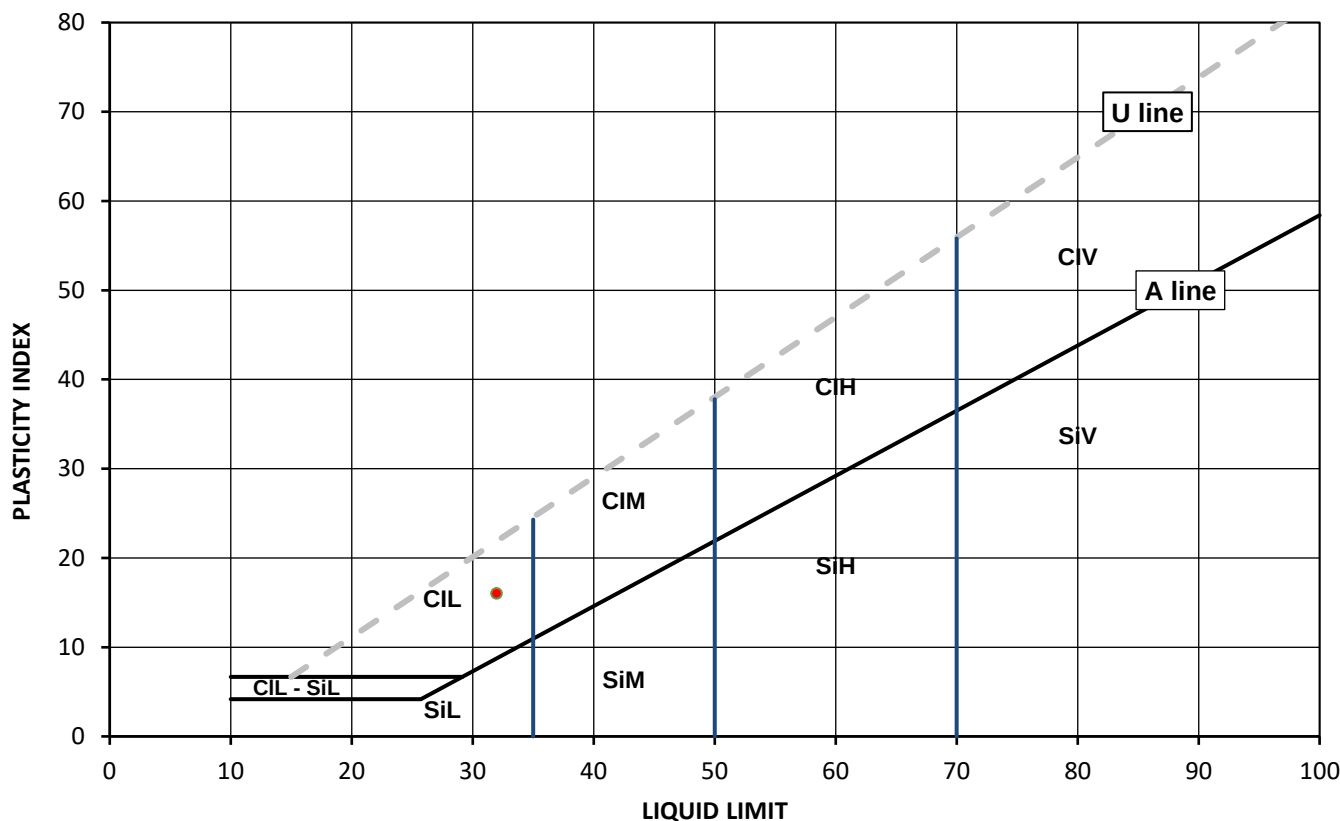
Test Results:

Laboratory Reference: 448940
Hole No.: TP108
Sample Reference: Not Given
Sample Description: Dark brown slightly gravelly very sandy CLAY

Depth Top [m]: 0.40
Depth Base [m]: 1.90
Sample Type: D

Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
26.1	32	0.984	16	16	0.63	0.38	86



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	
	V Very high	
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed:

Monika Siewior

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022,
cl 5.3, 6

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CW9 5LP
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Client Reference: C5980
Job Number: 25-006245-1
Date Sampled: Not Given
Date Received: 11/02/2025
Date Tested: 17/02/2025
Sampled By: Client - MAS

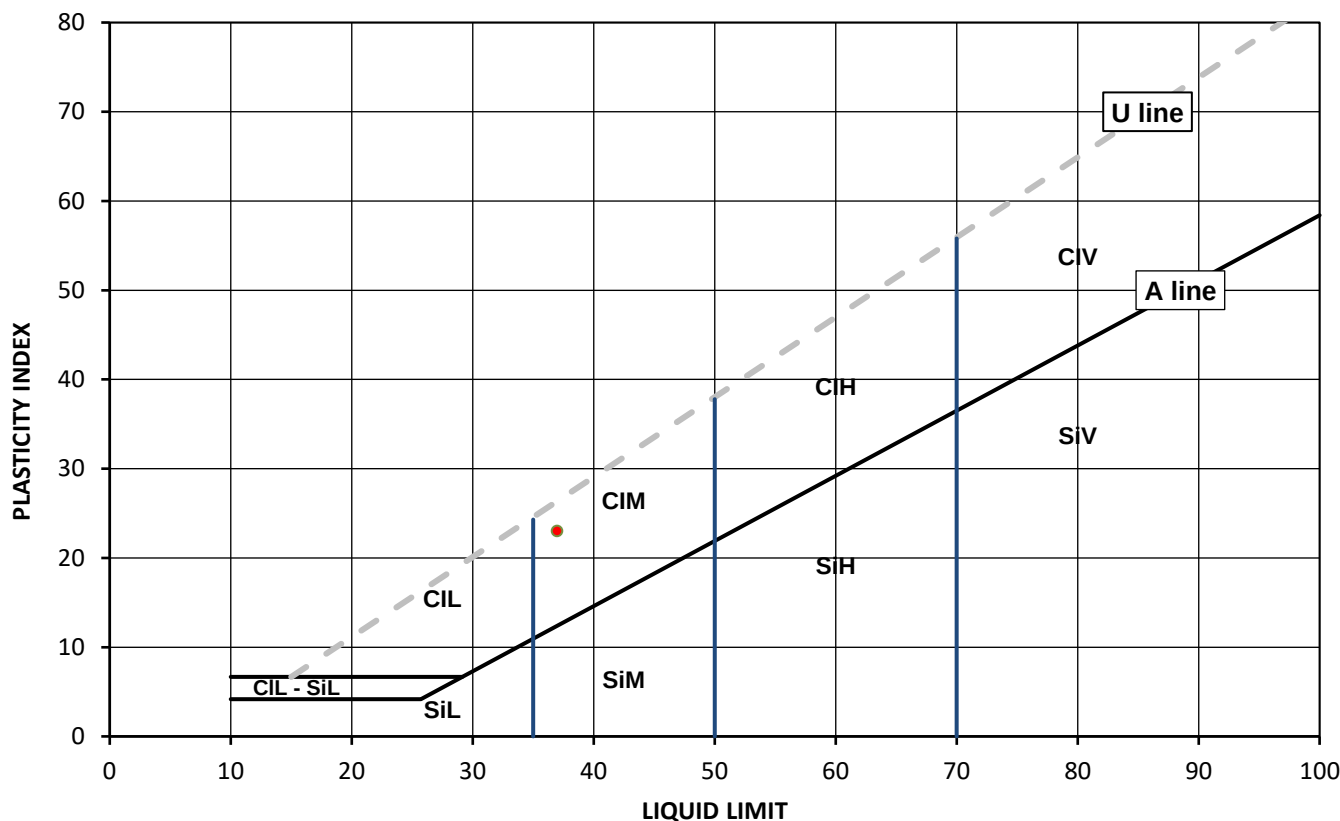
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 448941
Hole No.: TP117
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY
Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

Depth Top [m]: 0.40
Depth Base [m]: 1.60
Sample Type: D

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
19.7	37	1.039	14	23	0.26	0.74	93



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	L Low below 35
Si	Silt	M Medium 35 to 50
		H High 50 to 70
		V Very high exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed:

Monika Siewior

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022,
cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Brownfield Solutions Ltd
Client Address: William Smith House, 173 - 183 Witton Street,
Northwich, Cheshire,
CW9 5LP
Contact: Maeve Sutterby
Site Address: Halsnead Gardens

Client Reference: C5980
Job Number: 25-006245-1
Date Sampled: Not Given
Date Received: 11/02/2025
Date Tested: 17/02/2025
Sampled By: Client - MAS

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

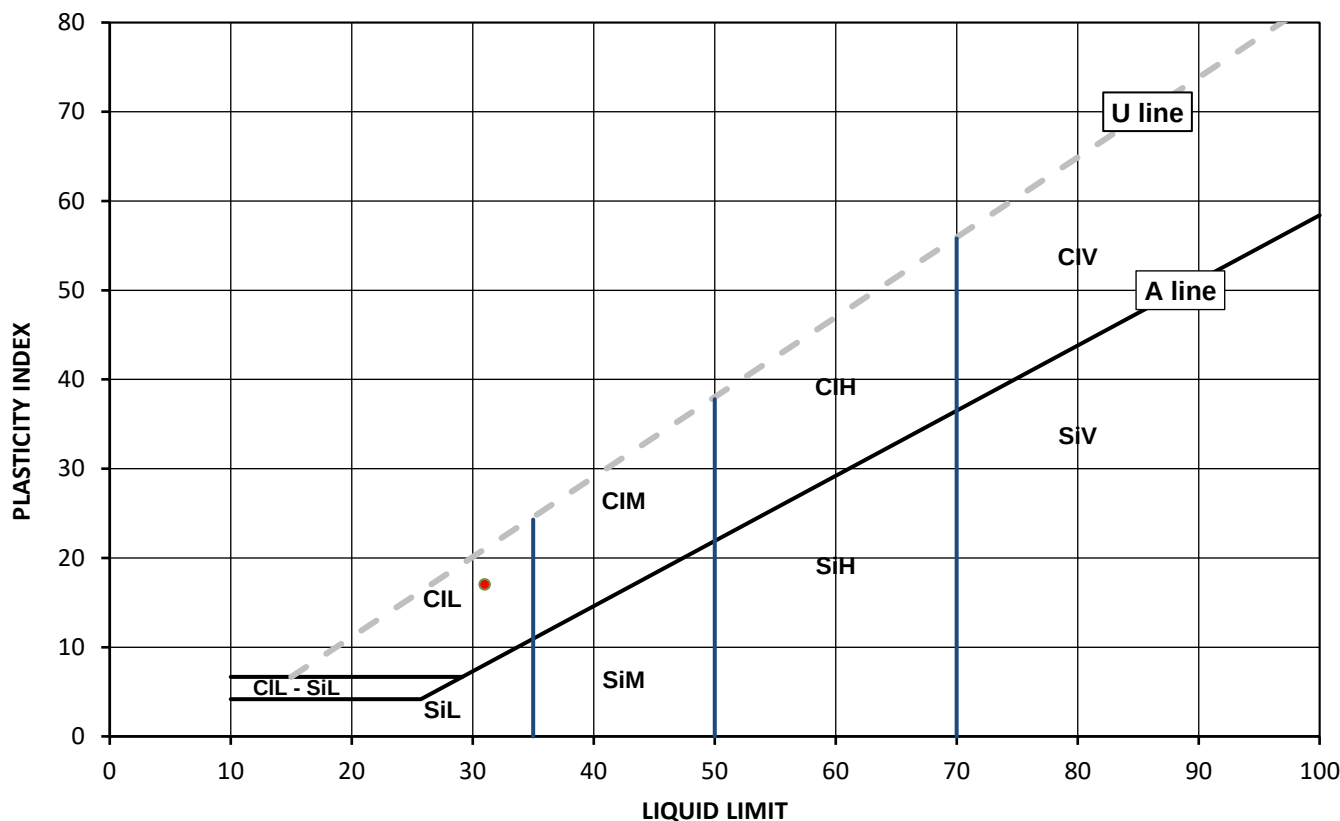
Test Results:

Laboratory Reference: 448942
Hole No.: TP120
Sample Reference: Not Given
Sample Description: Brown slightly gravelly very sandy CLAY

Depth Top [m]: 2.00
Depth Base [m]: 2.50
Sample Type: D

Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
20.8	31	1.000	14	17	0.41	0.59	81



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	
	V Very high	
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022,
cl 5.3, 6

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Date Tested: 17/02/2025
Sampled By: Client - MAS

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

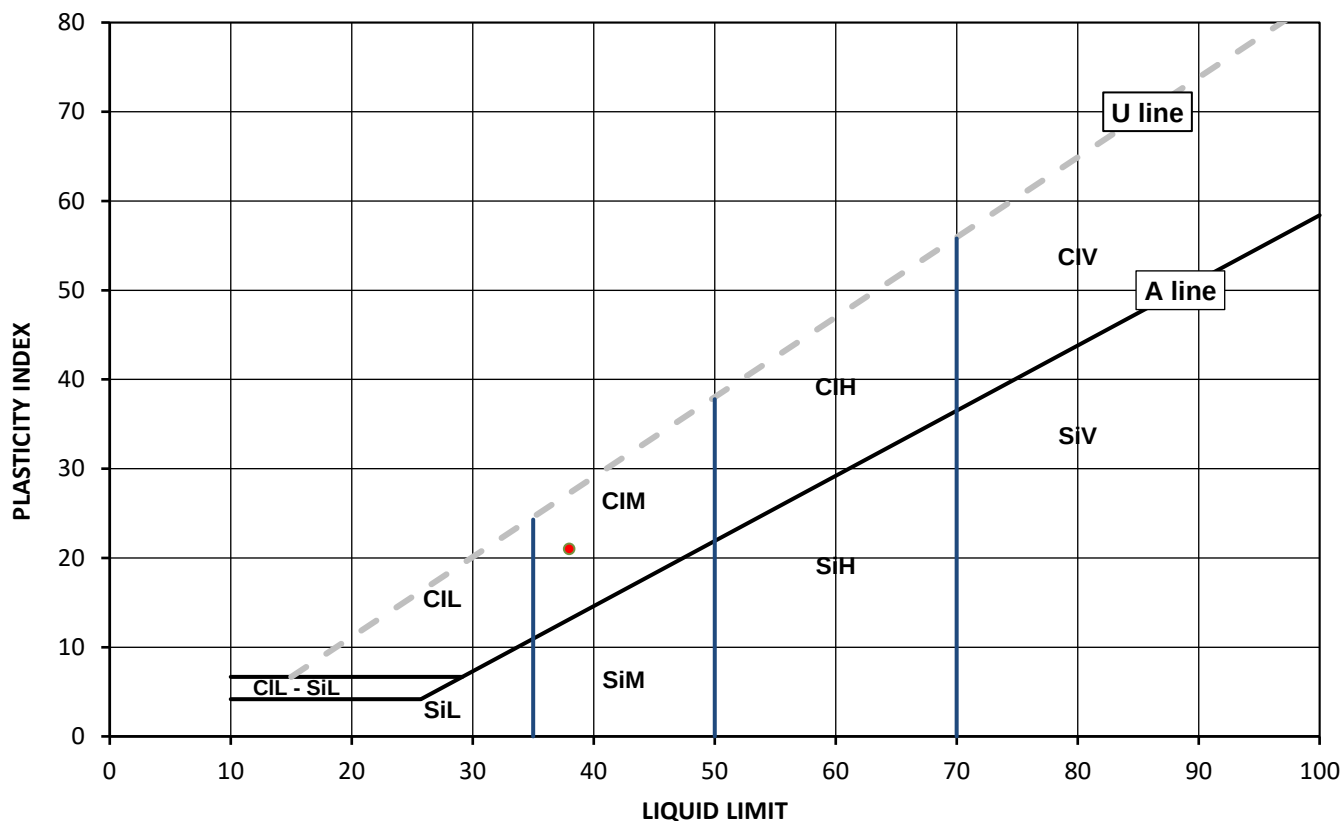
Test Results:

Laboratory Reference: 448943
Hole No.: TP125
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 0.90
Depth Base [m]: 2.30
Sample Type: D

Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
19.3	38	1.058	17	21	0.10	0.90	84



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
		50 to 70
		exceeding 70
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

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cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022,
cl 5.3, 6

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Date Tested: 17/02/2025
Sampled By: Client - MAS

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

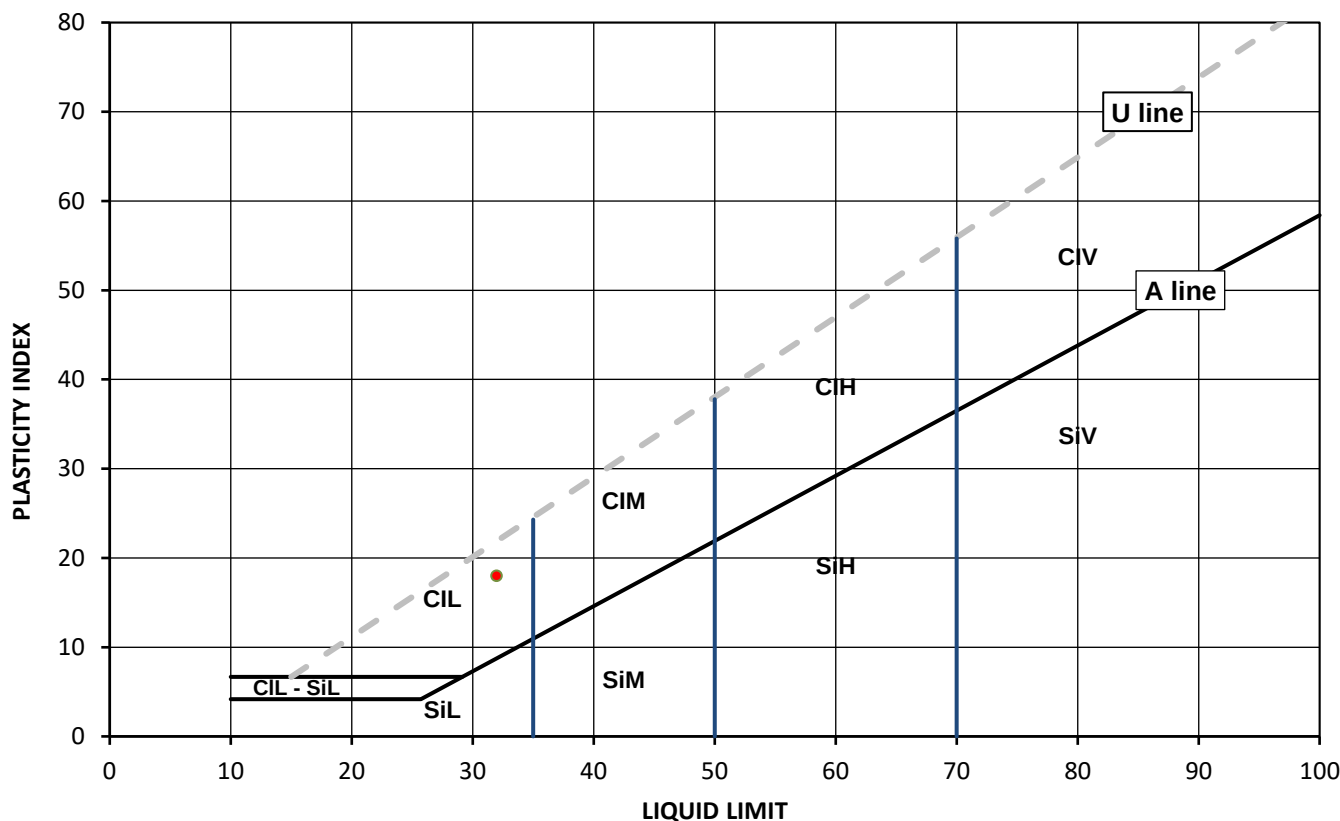
Test Results:

Laboratory Reference: 448944
Hole No.: WS104
Sample Reference: Not Given
Sample Description: Brown very sandy CLAY

Depth Top [m]: 0.40
Depth Base [m]: 1.50
Sample Type: D

Sample Preparation: Tested in natural condition;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
20.0	32	1.000	14	18	0.33	0.67	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
		50 to 70
		exceeding 70
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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TEST CERTIFICATE

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cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022,
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Job Number: 25-006245-1
Date Sampled: Not Given
Date Received: 11/02/2025
Date Tested: 17/02/2025
Sampled By: Client - MAS

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

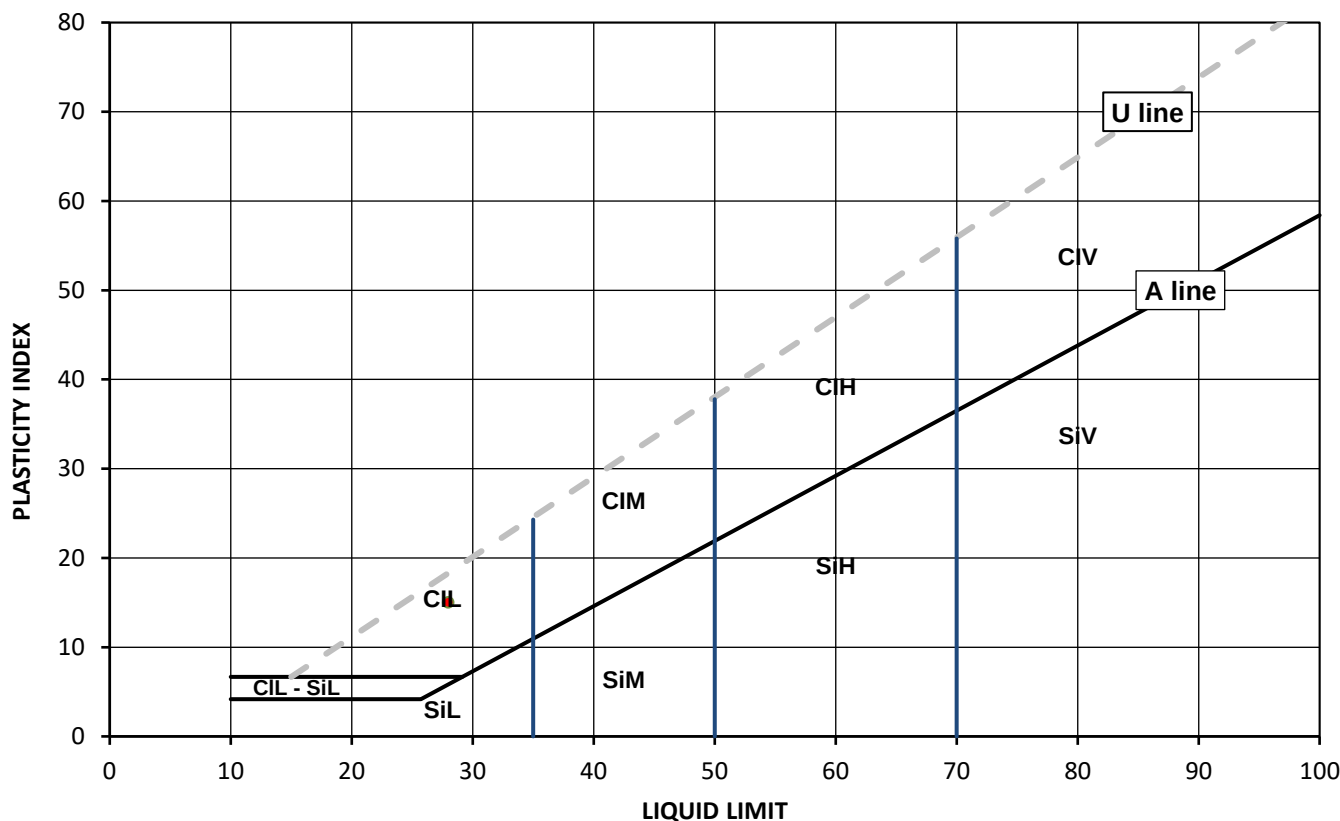
Test Results:

Laboratory Reference: 448945
Hole No.: WS102
Sample Reference: Not Given
Sample Description: Brown slightly gravelly very sandy CLAY

Depth Top [m]: 1.30
Depth Base [m]: 1.70
Sample Type: D

Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
19.8	28	1.030	13	15	0.47	0.53	95



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

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Date Sampled: Not Given
Date Received: 11/02/2025
Date Tested: 17/02/2025
Sampled By: Client - MAS

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

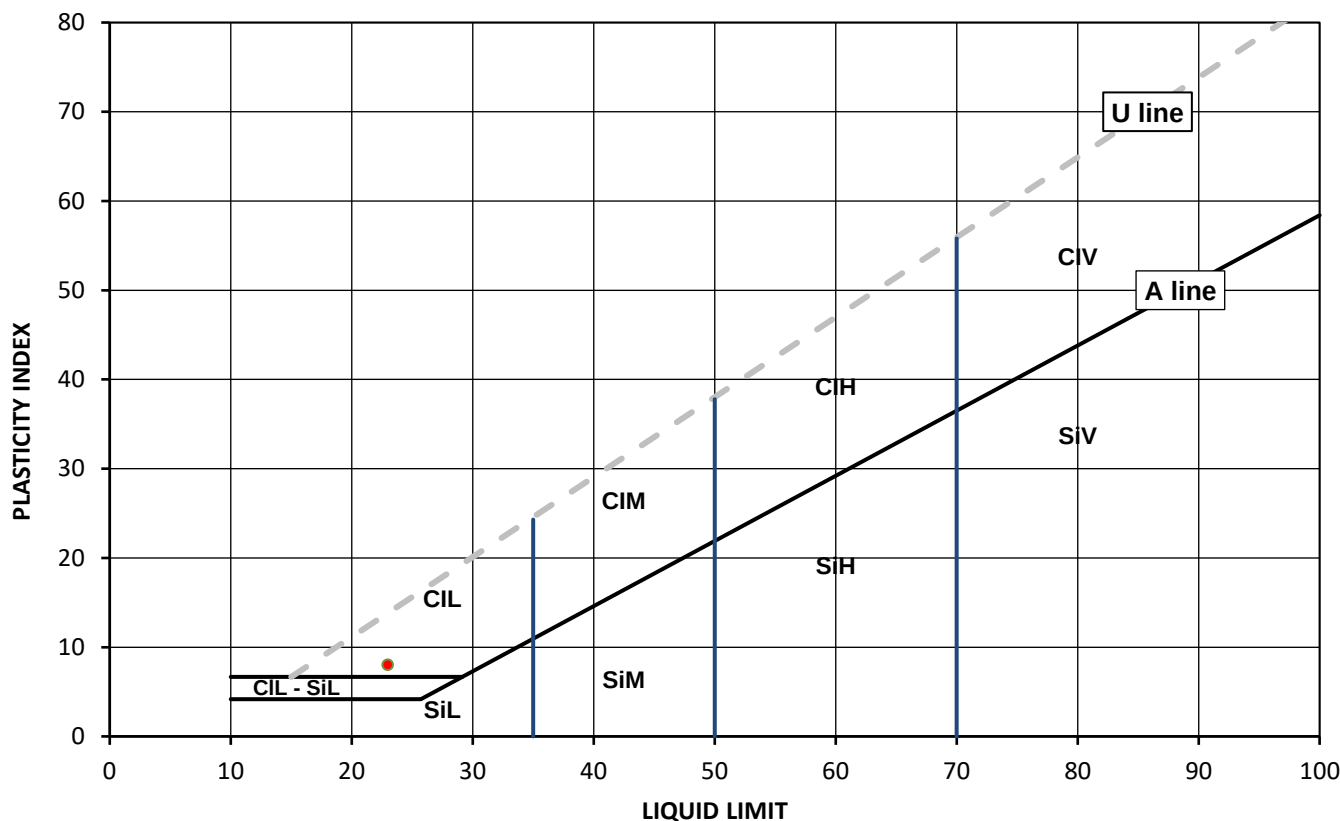
Test Results:

Laboratory Reference: 448946
Hole No.: WS105
Sample Reference: Not Given
Sample Description: Brown slightly gravelly clayey SAND

Depth Top [m]: 0.50
Depth Base [m]: 0.50
Sample Type: D

Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
18.5	23	1.030	15	8	0.50	0.50	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	append to classification for organic material (eg ClHO)
	V Very high	
	O Organic	

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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Sampled By: Client - MAS

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

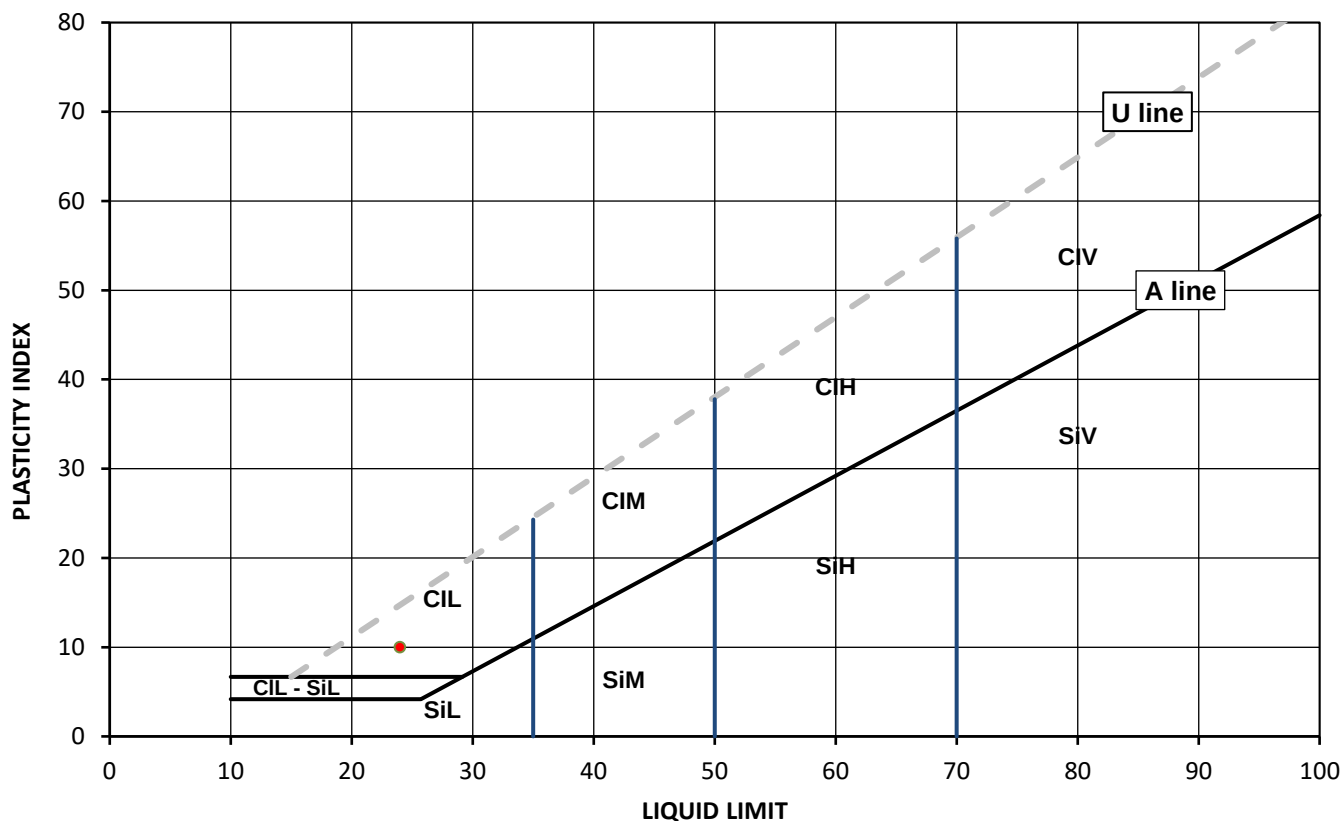
Test Results:

Laboratory Reference: 448947
Hole No.: WS106
Sample Reference: Not Given
Sample Description: Brown slightly gravelly clayey SAND

Depth Top [m]: 0.40
Depth Base [m]: 0.40
Sample Type: D

Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
14.9	24	1.014	14	10	0.10	0.90	96



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
		50 to 70
		exceeding 70
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

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cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022,
cl 5.3, 6

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Environmental Science

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Client Reference: C5980
Job Number: 25-006245-1
Date Sampled: Not Given
Date Received: 11/02/2025
Date Tested: 17/02/2025
Sampled By: Client - MAS

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

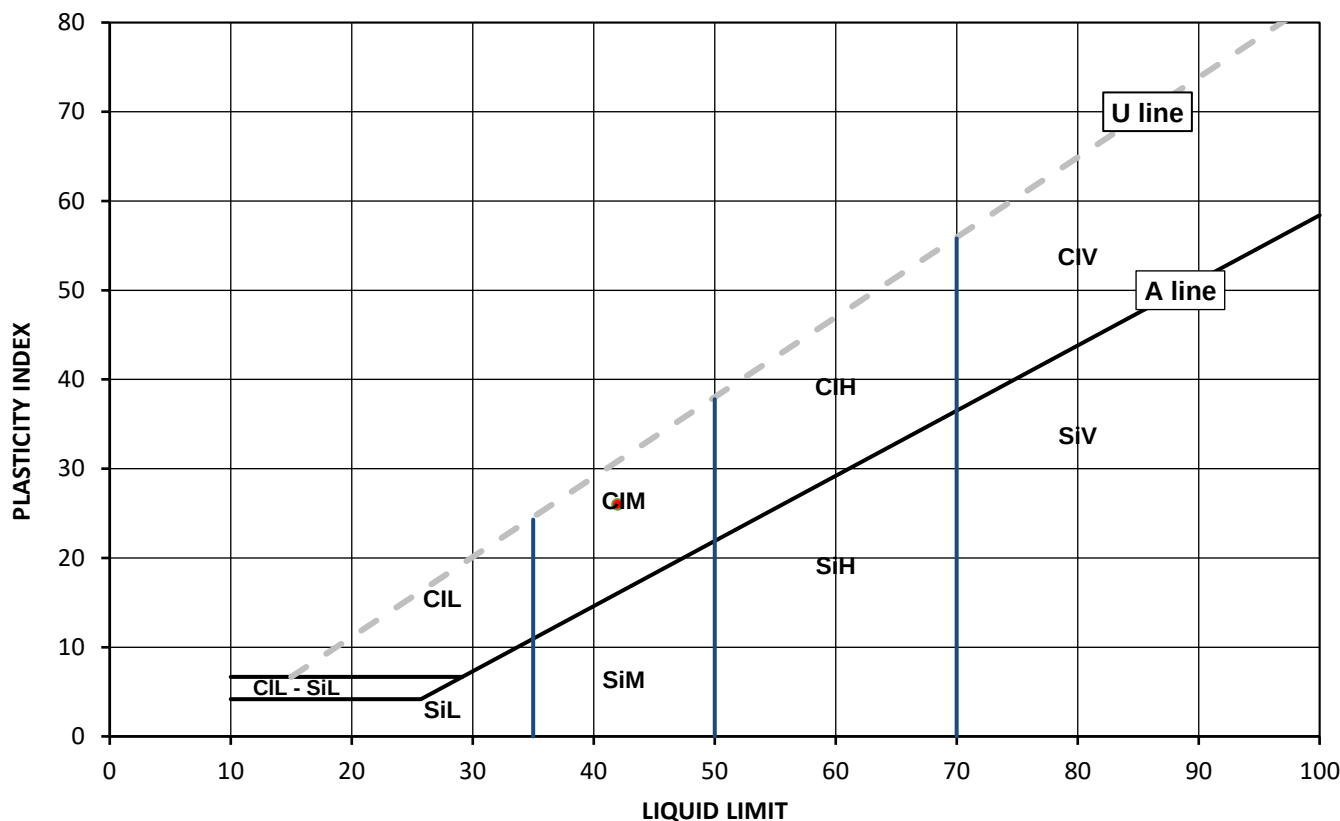
Test Results:

Laboratory Reference: 448948
Hole No.: WS108
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 0.40
Depth Base [m]: 0.40
Sample Type: D

Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
18.9	42	1.058	16	26	0.12	0.88	85



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		50 to 70
		exceeding 70
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Tested in Accordance with:

4041

Client: Brownfield Solutions Ltd
Client Address: William Smith House, 173 - 183 Witton Street,
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Contact: Maeve Sutterby
Site Address: Halsnhead Gardens

BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6. Correlation Factor by Clayton C.R.I and Jukes A.W (1978). W by BS EN ISO 17892-1:2014+A1:2022.

Client Reference: C5980
Job Number: 25-006245-1
Date Sampled: Not Given
Date Received: 11/02/2025
Date Tested: 17/02/2025
Sampled By: Client - MAS

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	W	Liquid & Plastic Limit							Density		
		Reference	Depth Top	Depth Base	Type				% Passing 425um	WL*	Correlation Factor	Wp	Ip	Cone type	Sample Preparation	bulk	dry	PD
			m	m														
448939	TP101	Not Given	0.40	2.10	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	19.8	85	35	1.030	16	19	80g/30 deg	R			
448940	TP108	Not Given	0.40	1.90	D	Dark brown slightly gravelly very sandy CLAY	Atterberg 1 Point	26.1	86	32	0.984	16	16	80g/30 deg	R			
448941	TP117	Not Given	0.40	1.60	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	19.7	93	37	1.039	14	23	80g/30 deg	R			
448942	TP120	Not Given	2.00	2.50	D	Brown slightly gravelly very sandy CLAY	Atterberg 1 Point	20.8	81	31	1.000	14	17	80g/30 deg	R			
448943	TP125	Not Given	0.90	2.30	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	19.3	84	38	1.058	17	21	80g/30 deg	R			
448944	WS104	Not Given	0.40	1.50	D	Brown very sandy CLAY	Atterberg 1 Point	20.0	100	32	1.000	14	18	80g/30 deg	N			
448945	WS102	Not Given	1.30	1.70	D	Brown slightly gravelly very sandy CLAY	Atterberg 1 Point	19.8	95	28	1.030	13	15	80g/30 deg	R			
448946	WS105	Not Given	0.50	0.50	D	Brown slightly gravelly clayey SAND	Atterberg 1 Point	18.5	99	23	1.030	15	8	80g/30 deg	R			
448947	WS106	Not Given	0.40	0.40	D	Brown slightly gravelly clayey SAND	Atterberg 1 Point	14.9	96	24	1.014	14	10	80g/30 deg	R			
448948	WS108	Not Given	0.40	0.40	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	18.9	85	42	1.058	16	26	80g/30 deg	R			

Note: # Non accredited; NP - Non plastic; N - Tested in natural condition, R - Tested after >0.425mm removed by hand, WR - Tested after washing to remove >425mm; * - One point liquid limit corrected as per the report Correlation Factor by Clayton C.R.I and Jukes A.W (1978)

Comments:

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SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022, clause 4.1

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: Brownfield Solutions Ltd
Client Address: William Smith House, 173 - 183 Witton Street,
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CW9 5LP
Contact: Maeve Sutterby
Site Address: Halsnead Gardens

Client Reference: C5980
Job Number: 25-006245-1
Date Sampled: Not Given
Date Received: 11/02/2025
Date Tested: 17/02/2025
Sampled By: Client - MAS

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC											
		Reference	Depth Top m	Depth Base m	Type														
448939	TP101	Not Given	0.40	2.10	D	Brown slightly gravelly sandy CLAY		19.8											
448940	TP108	Not Given	0.40	1.90	D	Dark brown slightly gravelly very sandy CLAY		26.1											
448941	TP117	Not Given	0.40	1.60	D	Brown slightly gravelly sandy CLAY		19.7											
448942	TP120	Not Given	2.00	2.50	D	Brown slightly gravelly very sandy CLAY		20.8											
448943	TP125	Not Given	0.90	2.30	D	Brown slightly gravelly sandy CLAY		19.3											
448944	WS104	Not Given	0.40	1.50	D	Brown very sandy CLAY		20.0											
448945	WS102	Not Given	1.30	1.70	D	Brown slightly gravelly very sandy CLAY		19.8											
448946	WS105	Not Given	0.50	0.50	D	Brown slightly gravelly clayey SAND		18.5											
448947	WS106	Not Given	0.40	0.40	D	Brown slightly gravelly clayey SAND		14.9											
448948	WS108	Not Given	0.40	0.40	D	Brown slightly gravelly sandy CLAY		18.9											

Comments:

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Determination of Indicative CBR Value by Lightweight Deflectometer (LWD)

IAN 73/06 (2009 amendment), LWD Manufacturer's Manual and Barounis, N. & Smith, T. (2017)

Client: United Living
Site Name: Halsnead Gardens Phase 1
Job Number: C5980
Date(s) Tested: 14/02/2025



**BROWNFIELD
SOLUTIONS LTD**

www.brownfield-solutions.com
(+44) 0800 044 8025
info@brownfield-solutions.co.uk

Equipment: Terratest 4000 STREAM
Plate Size: 300mm
Drop Weight Mass: 10kg

Location	Depth (m)	Stratum Type	Brief Description	Evd (MN/m ²)	Poisson's Ratio	Ev1 (MN/m ²)	k ₃₀₀	k ₇₆₂	Estimated CBR (%)
LWD101	0.20	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.9	0.4	4.92	13.77	6.06	0.2
LWD102	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	6.5	0.4	5.42	15.17	6.67	0.3
LWD103	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	10.7	0.4	8.92	24.97	10.99	0.6
LWD104	0.20	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.4	0.4	4.50	12.60	5.54	0.2
LWD105	0.20	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	7.3	0.4	6.08	17.03	7.49	0.3
LWD106	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	8.0	0.4	6.67	18.67	8.21	0.4
LWD107	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	6.2	0.4	5.17	14.47	6.37	0.2
LWD108	0.20	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	7.3	0.4	6.08	17.03	7.49	0.3
LWD110	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.8	0.4	4.83	13.53	5.95	0.2
LWD111	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.2	0.4	4.33	12.13	5.34	0.2
LWD112	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.9	0.4	4.92	13.77	6.06	0.2
LWD113	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.1	0.4	4.25	11.90	5.24	0.2
LWD114	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	6.2	0.4	5.17	14.47	6.37	0.2
LWD115	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.4	0.4	4.50	12.60	5.54	0.2
LWD116	0.20	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.1	0.4	4.25	11.90	5.24	0.2
LWD118	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.0	0.4	4.17	11.67	5.13	0.2
LWD119	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.1	0.4	4.25	11.90	5.24	0.2
LWS120	0.30	Natural - Cohesive/Fine	Slightly sandy slightly gravelly CLAY	5.2	0.4	4.33	12.13	5.34	0.2

Compiled By: Sam Jennings

Signature:

Checked By: Jack Mather

Signature:

Date: 25/03/25

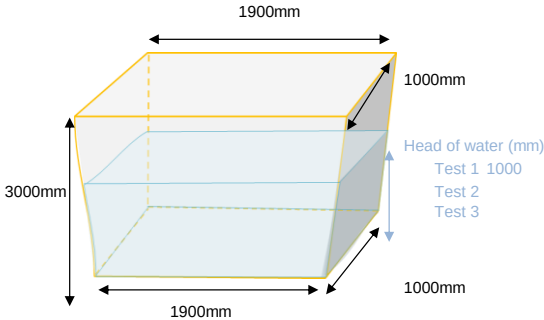
Percolation Test	UNITED LIVING	Date of Test: 29/01/2025	 BROWNFIELD SOLUTIONS LTD
	Halsnead Gardens	Logged By: GK	
SA101	C5890	Checked By: JM	

Dimensions (mm)	TEST 1		
	1900		
Length at Top	1900		
Length at Bottom	1000		
Width at Top	1000		
Width at Bottom	1000		
Depth Tested (Head of Water)	1000		
Depth of Excavation	3000		

Volume of Water (m3)	1.9		
Void Ratio	1		
Factored Volume of Water (m3)	1.9		

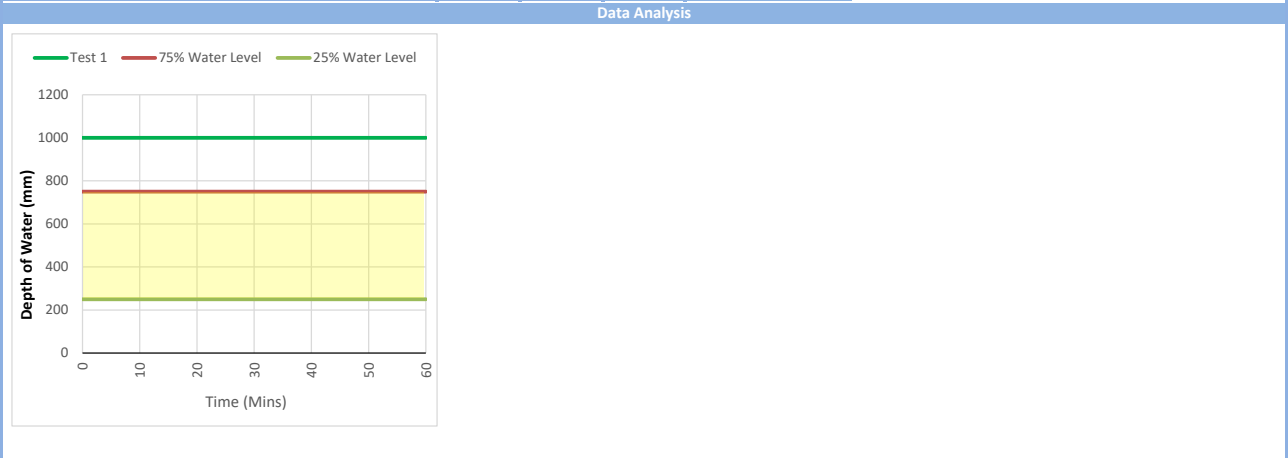
Strata Description	Clay to 2.40m then destructured sandstone bedrock to base
Pit Details	Open with no stone filling See associated log for stratum details

Test Pit Construction



Site Recorded Data								
Test 1								
Time (mins)	Depth to water (mm)	Head of water (mm)						
0.00	2000	1000						
0.08	2000	1000						
0.16	2000	1000						
0.24	2000	1000						
0.32	2000	1000						
0.42	2000	1000						
0.50	2000	1000						
0.64	2000	1000						
0.78	2000	1000						
1.00	2000	1000						
2.00	2000	1000						
3.00	2000	1000						
4.00	2000	1000						
5.00	2000	1000						
6.00	2000	1000						
7.00	2000	1000						
8.00	2000	1000						
9.00	2000	1000						
10.00	2000	1000						
15.00	2000	1000						
20.00	2000	1000						
25.00	2000	1000						
30.00	2000	1000						
40.00	2000	1000						
50.00	2000	1000						
60.00	2000	1000						

Percolation Test	UNITED LIVING	Date of Test: 29/01/2025	 BROWNFIELD SOLUTIONS LTD
	Halsnood Gardens	Logged By: GK	
	SA101	Checked By: JM	



Soil Infiltration Rate Calculation			
	Test 1	Test 2	Test 3
Water Level 1	2000.000		
Water Level 2	2000.000		
Time to drain from Water Level 1 to Level 2 (m	60.000		
Volume of Water Discharged m3)	0.0000000		
Discharge Area (m3)	13.500		
Soil Infiltration Rate (m/min)	0.0000000		
Soil Infiltration Rate (m/sec)	Unable to calculate due to no infiltration		

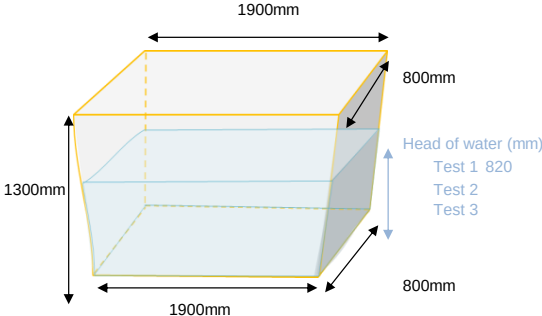
Compliance Check			
	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	750		
Water Level at 25% effective depth (mm)	250		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

Percolation Test	UNITED LIVING	Date of Test: 29/01/2025	 BROWNFIELD SOLUTIONS LTD
	Halsnead Gardens	Logged By: GK	
SA102	C5890	Checked By: JM	

Dimensions (mm)	TEST 1	TEST 2	TEST 3	Test Pit Construction
	Length at Top	1900		
	Length at Bottom	1900		
	Width at Top	800		
	Width at Bottom	800		
	Depth Tested (Head of Water)	820		
	Depth of Excavation	1300		

Volume of Water (m3)	1.2464		
Void Ratio	1		
Factored Volume of Water (m3)	1.2464		

Strata Description	Slightly sandy gravelly clay
Pit Details	Open with no stone filling See associated log for stratum details

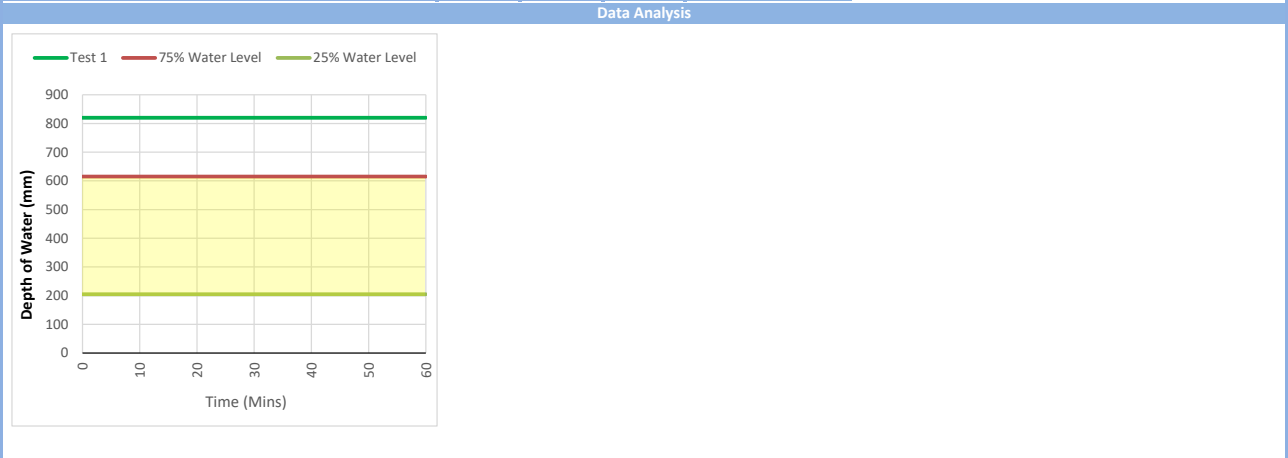


1900mm
800mm
1300mm
1900mm
800mm
Head of water (mm)
Test 1 820
Test 2
Test 3

Site Recorded Data

Test 1								
Time (mins)	Depth to water (mm)	Head of water (mm)						
0.00	480	820						
0.08	480	820						
0.16	480	820						
0.24	480	820						
0.32	480	820						
0.42	480	820						
0.50	480	820						
0.64	480	820						
0.78	480	820						
1.00	480	820						
2.00	480	820						
3.00	480	820						
4.00	480	820						
5.00	480	820						
6.00	480	820						
7.00	480	820						
8.00	480	820						
9.00	480	820						
10.00	480	820						
15.00	480	820						
20.00	480	820						
25.00	480	820						
30.00	480	820						
40.00	480	820						
50.00	480	820						
60.00	480	820						

Percolation Test	UNITED LIVING	Date of Test: 29/01/2025	 BROWNFIELD SOLUTIONS LTD
	Halsnood Gardens	Logged By: GK	
SA102	C5890	Checked By: JM	



Soil Infiltration Rate Calculation			
	Test 1	Test 2	Test 3
Water Level 1	480.000		
Water Level 2	480.000		
Time to drain from Water Level 1 to Level 2 (m	60.000		
Volume of Water Discharged m3)	0.0000000		
Discharge Area (m3)	4.112		
Soil Infiltration Rate (m/min)	0.0000000		
Soil Infiltration Rate (m/sec)	Unable to calculate due to no infiltration		

Compliance Check			
	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	615		
Water Level at 25% effective depth (mm)	205		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

APPENDIX E

Monitoring Results

Ground Gas Monitoring Results



CLIENT:		Date	Operator	Analysar	Weather Observations				Temp (°C)	Pressure Trend	Min Barometric Pressure (mb)				Notes										
UNITED LIVING		13/02/2025	AR	GA5000	Overcast	Light breeze		Cold	4	Rising	1021														
JOB NO.		26/02/2025	AR	GFM436	Sunny	Light breeze		Cool	7	Rising	1008														
C5980		13/03/2025	AR	GFM436	Sunny	Light breeze		Cold	4	Rising	1006														
SITE:		26/03/2025	AR	GFM436	Intermittent cloud	Light breeze		Warm	11	Falling	1025														
HALSNEAD GARDENS		11/05/2025	AR	GFM436	Sunny	No wind		Warm	11	Falling	1024														
		22/04/2025	SJ	GFM436	Sunny	No wind		Warm	13	Falling	1015														
Notes: mb = millibars; CH ₄ = methane; LEL = lower explosive limit = 5%v/v; CO ₂ = carbon dioxide; O ₂ = oxygen; CO=carbon monoxide; H ₂ S = hydrogen sulphide; TVOC= Total volatile organic compounds; PPM = parts per million. Where the flow is less than the limit of detection of the instrument, the detection limit is reported (Highlighted in green). Gas Screening Values (GSVs) are rounded to 3 decimal places. Calibration Records for analysers used available on request.																									
Date	Time	Location	Response zone (m)	Pressures (mb)		Gas flows (l/hr)		CH ₄ (%v/v)		CH ₄ (%LEL)		CO ₂ (%v/v)		O ₂ (%v/v)		Other Gases (PPM)			Depth to Water (m)	Well Base (m)	Gas Screening Value (CH ₄) (l/hr)	Gas Screening Value (CO ₂) (l/hr)	Notes		
				Atmospheric Pressure	Relative Well Pressure	Initial	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	CO	H ₂ S	TVOC (PID)							
				Summary Statistics																					
				Max. values:		1022	0.2	3.3	0.2	0.7	0.2	14.0	4.0	8.6	4.8	21.6	21.6	0.0	0.0	0.0	9.6	33.3	0.000	0.004	Highlight Box - Methane >1.0% v/v
				Min. values:		1000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	7.4	0.0	0.0	0.0	1.2	2.3	0.000	0.000	Highlight Box - Carbon Dioxide >5.0% v/v
				Top	Bottom	Worst-case (note - not worst credible) GSVs based on maximum recorded steady flow and maximum individual peak concentrations:																0.001	0.017	Highlight Box - Water above Response Zone	
13/02/2025		Ambient			1014				0.1		2.0		0.1		21.4										
	AM	WS101	0.60	3.60		0.0	0.0	0.0	0.1	0.1	2.0	2.0	0.8	0.5	20.8	21.3		0.0		1.54	3.38	0.000	0.000		
	AM	RO103	5.00	10.00		0.0	0.0	0.0	0.7	0.2	14.0	4.0	5.1	1.1	3.4	18.3		0.0		7.00	33.30	0.000	0.000		
	AM	WS103	1.50	3.00		0.2	0.2	0.2	0.1	0.1	2.0	2.0	2.1	1.8	11.4	12.7		0.0		1.83	2.89	0.000	0.004		
	AM	WS105	0.50	2.50		0.0	0.0	0.0	0.1	0.1	2.0	2.0	0.2	0.2	21.3	21.6		0.0		NGW	2.36	0.000	0.000		
	AM	WS106	0.5	2.50		0.0	0.0	0.0	0.1	0.1	2.0	2.0	0.6	0.3	19.7	20.4		0.0		NGW	2.61	0.000	0.000		
	PM	WS108	0.50	2.50		0.1	0.1	0.0	0.1	0.1	2.0	2.0	0.1	0.1	13.5	16.0		0.0		NGW	2.61	0.000	0.000		
	AM	WS109	0.50	2.00		0.0	0.0	0.0	0.1	0.1	2.0	2.0	3.1	1.1	20.5	21.4		0.0		1.47	2.55	0.000	0.000		
	PM	RO114	5.00	9.00		0.0	0.0	0.0	0.1	0.1	2.0	2.0	1.5	0.3	19.1	21.2		0.0		6.64	8.63	0.000	0.000		
		Ambient			1013				0.1		2.0		0.1		21.6										
26/02/2025																									
		Ambient			1003				0.1		2.0		0.1		20.4										
	AM	WS101	0.60	3.60		0.0	0.0	0.0	0.1	0.1	2.0	2.0	0.9	0.8	19.4	19.4	0.0	0.0		1.22	3.34	0.000	0.000		
	AM	RO103	5.00	10.00		0.0	0.0	0.0	0.1	0.1	2.0	2.0	4.8	1.2	2.0	16.5	0.0	0.0		8.09	30.00	0.000	0.000		
	AM	WS103	1.50	3.00		0.0	0.0	0.0	0.1	0.1	2.0	2.0	3.0	2.3	7.1	7.4	0.0	0.0		2.4	2.82	0.000	0.000		
	AM	WS105	0.50	2.50		0	0	0	0.1	0.1	2.0	2.0	1.5	1.2	18.6	19	0	0		NGW	2.33	0.000	0.000		
	AM	WS106	0.5	2.50		0.0	0.0	0.0	0.1	0.1	2.0	2.0	0.7	0.5	18.7	19.5	0.0	0.0		NGW	2.56	0.000	0.000		
	AM	WS108	0.50	2.50		0.0	0.0	0.0	0.1	0.1	2.0	2.0	0.5	0.2	12.6	17.6	0.0	0.0		NGW	2.57	0.000	0.000		
	AM	WS109	0.50	2.00		0.0	0.0	0.0	0.1	0.1	2.0	2.0	3.2	2.4	16.5	17.4	0.0	0.0		1.48	2.58	0.000	0.000		
	AM	RO114	5.00	9.00		0.0	0.0	0.0	0.1	0.1	2.0	2.0	2.1	0.4	17.8	20.4	0.0	0.0		7.63	8.55	0.000	0.000		
		Ambient			1000				0.1		2.0		0.1		20.6										
13/03/2025																									
		Ambient			1008				0.1		2.0		0.0		20.1										
	AM	WS101	0.60	3.60		0.0	0.0	0.0	0.1	0.1	2.0	2.0	1.6	0.7	18.7	19.6	0.0	0.0		1.87	3.39	0.000	0.000		
	AM	RO103	5.00	10.00		0.0	3.3	0.0	0.1	0.1	2.0	2.0	5.4	1.3	0.3	15.8	0.0	0.0		8.72	30.24	0.000	0.000		
	AM	WS103	1.50	3.00		0.0	0.0	0.0	0.1	0.1	2.0	2.0	2.8	1.2	7.6	14.9	0.0	0.0		2.40	2.85	0.000	0.000		
	AM	WS105	0.50	2.50		0.0	0.0	0.0	0.1	0.1	2.0	2.0	3.2	1.8	15.6	17.8	0.0	0.0		NGW	2.37	0.000	0.000		
	AM	WS106	0.5	2.50		0.0	0.0	0.0	0.1	0.1	2.0	2.0	0.6	0.6	20.0	20.1	0.0	0.0		NGW	2.59	0.000	0.000		
	AM	WS108	0.50	2.50		0.0	0.0	0.0	0.1	0.1	2.0	2.0	1.4	0.9	8.6	13.6	0.0	0.0		NGW	2.61	0.000	0.000		
	AM	WS109	0.50	2.00		0.0	0.0	0.0	0.1	0.1	2.0	2.0	6.1	3.5	6.2	12.5	0.0	0.0		1.96	2.52	0.000	0.000		
	AM	RO114	5.00	9.00		0.0	0.0	0.0	0.1	0.1	2.0	2.0	2.7	0.8	14.7	18.9	0.0	0.0		8.53	8.60	0.000	0.000		
		Ambient			1005				0.1		2.0		0.0		20.3										

Ground Gas Monitoring Results



Date	Time	Location	Response zone (m)		Pressures (mb)		Gas flows (l/hr)		CH ₄ (%v/v)		CH ₄ (%LEL)		CO ₂ (%v/v)		O ₂ (%v/v)		Other Gases (PPM)			Depth to Water (m)	Well Base (m)	Gas Screening Value (CH ₄) (l/hr)	Gas Screening Value (CO ₂) (l/hr)	Notes
					Atmospheric Pressure	Relative Well Pressure	Initial	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	CO	H ₂ S	TVOC (PID)					
26/03/2025		Ambient			1021				0.0		0.0		0.1		20.7									
	AM	WS101	0.60	3.60		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.7	18.8	20.1	0.0	0.0		2.08	3.34	0.000	0.000	
	PM	RO103	5.00	10.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	1.0	0.4	16.7	0.0	0.0		9.05	30.12	0.000	0.000	
	AM	WS103	1.50	3.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	1.0	9.2	16.2	0.0	0.0		2.58	2.80	0.000	0.000	
	AM	WS105	0.50	2.50		0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	1.9	15.7	18.3	0.0	0.0		NGW	2.35	0.000	0.000	
	PM	WS106	0.5	2.50		0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.5	17.8	20.4	0.0	0.0		NGW	2.55	0.000	0.000	
	PM	WS108	0.50	2.50		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	20.5	16.0	0.0	0.0		NGW	2.57	0.000	0.000	
	AM	WS109	0.50	2.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	2.1	5.9	15.2	0.0	0.0		1.99	2.48	0.000	0.000	
	PM	RO114	5.00	9.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.2	13.4	20.4	0.0	0.0		NGW	8.54	0.000	0.000	
		Ambient			1022				0.0		0.0		0.0		20.7									
11/05/2025		Ambient			1016				0.0		0.0		0.0		20.2									
	AM	WS101	0.60	3.60		0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	1.1	18.3	19.6	0.0	0.0		2.27	3.38	0.000	0.000	
	AM	RO103	5.00	10.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	1.1	0.5	16.3	0.0	0.0		9.41	30.09	0.000	0.000	
	AM	WS103	1.50	3.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	1.4	8.2	14.6	0.0	0.0		2.71	2.89	0.000	0.000	
	AM	WS105	0.50	2.50		0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	2.0	14.3	18.1	0.0	0.0		NGW	2.37	0.000	0.000	
	AM	WS106	0.5	2.50		0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.2	18.6	19.5	0.0	0.0		NGW	2.59	0.000	0.000	
	AM	WS108	0.50	2.50		0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	2.9	3.7	8.7	0.0	0.0		NGW	2.61	0.000	0.000	
	AM	WS109	0.50	2.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6	3.5	10.3	16.2	0.0	0.0		2.17	2.51	0.000	0.000	
	AM	RO114	5.00	9.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.9	17.4	18.7	0.0	0.0		NGW	8.60	0.000	0.000	
		Ambient			1016				0.0		0.0		0.0		20.6									
22/04/2025		Ambient			1006				0.0		0.0		0.0		20.9									
	AM	WS101	0.60	3.60		0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	1.7	19.2	19.8	0.0	0.0		2.36	3.40	0.000	0.000	
	AM	RO103	5.00	10.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.9	1.4	17.4	0.0	0.0		9.56	30.51	0.000	0.000	
	AM	WS103	1.50	3.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	1.2	10.1	15.5	0.0	0.0		2.30	2.89	0.000	0.000	
	AM	WS105	0.50	2.50		0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	2.0	17.2	19.4	0.0	0.0		NGW	2.38	0.000	0.000	
	AM	WS106	0.5	2.50		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.7	20.3	20.5	0.0	0.0		NGW	2.62	0.000	0.000	
	AM	WS108	0.50	2.50		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.6	19.1	20.3	0.0	0.0		NGW	2.61	0.000	0.000	
	AM	WS109	0.50	2.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	4.8	16.6	17.7	0.0	0.0		2.20	2.53	0.000	0.000	
	AM	RO114	5.00	9.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.3	19.4	20.5	0.0	0.0		8.56	8.72	0.000	0.000	
		Ambient			1006				0.0		0.0		0.0		21.0									

APPENDIX F

Waste Assessment Report

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



EGSP8-4Z9HA-3PJY

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

Report is invalid if pages are removed.

Job name

C5980 Halsnead Phase 1

Description/Comments

Project

Halsnead Phase 1

Site

C5980

Classified by

Name: **Jack Mather**
Date: **28 Mar 2025 11:59 GMT**
Telephone: **01606334844**
Company: **Brownfield Solutions Limited**
173-183 Witton Street
Northwich
CW9 5LP

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification

Date

09 Feb 2023

Next 3 year Refresher due by Feb 2026

Purpose of classification

2 - Material Characterisation

Address of the waste

Halsnead Gardens, Prescot

Post Code **L35 3QF**

SIC for the process giving rise to the waste

41100 Development of building projects

Description of industry/producer giving rise to the waste

Development of soft landscaping open fields into residential housing.

Description of the specific process, sub-process and/or activity that created the waste

Waste created during soil excavation for land redevelopment into housing.

Description of the waste

"Predominantly:
Made Ground: Sandy gravelly clay with anthropogenic inclusions of brick, ceramic, metal, and coal.
Natural Superficial: Sandy gravelly clay.
Solid Geology: Coal, sandstone, mudstone, siltstone, and/or shale."



Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP101	0.10-0.40	Non Hazardous		3
2	TP103	0.60-1.80	Non Hazardous		4
3	TP106	0.50-2.30	Non Hazardous		5
4	TP107	0.30-0.70	Non Hazardous		6
5	TP112	0.30-0.70	Non Hazardous		8
6	TP115	0.50-2.10	Non Hazardous		10
7	TP117	0.10-0.40	Non Hazardous		12
8	TP120	0.40-2.00	Non Hazardous		14
9	TP124	1.60-2.00	Non Hazardous		15
10	TP125	0.10-0.30	Non Hazardous		16
11	TP126	1.20-2.80	Non Hazardous		18
12	TP127	0.90-2.15	Non Hazardous		19
13	TP130	0.40-2.30	Non Hazardous		20
14	TP131	0.60-1.60	Non Hazardous		21
15	TP133	0.10-0.30	Non Hazardous		22
16	TP135	0.10-0.70	Non Hazardous		24
17	WS101	0.40-1.70	Non Hazardous		26
18	WS102	2.00-2.45	Non Hazardous		27
19	WS103	0.10-0.60	Non Hazardous		28
20	WS103[2]	0.60-1.20	Non Hazardous		30
21	WS105	0.00-0.30	Non Hazardous		32
22	WS107	0.80-1.00	Non Hazardous		34
23	WS108	1.50-1.50	Non Hazardous		35
24	WS109A	0.00-0.50	Non Hazardous		36
25	WS109A[2]	0.60-0.60	Non Hazardous		38
26	WS110	0.00-0.40	Non Hazardous		39
27	WS111	0.50-0.50	Non Hazardous		41
28	WS112	0.50-0.50	Non Hazardous		43
29	WS112[2]	1.50-1.50	Non Hazardous		44
30	TP135[2]	0.10-0.70	Non Hazardous		46
31	WS109A[3]	0.00-0.50	Non Hazardous		48
32	WS01	0.10-0.40	Non Hazardous		50

Related documents

#	Name	Description
1	BSL Suite	waste stream template used to create this Job

Report

Created by: Jack Mather

Created date: 28 Mar 2025 11:59 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	52
Appendix B: Rationale for selection of metal species	53
Appendix C: Version	53



Classification of sample: TP101

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

Sample details

Sample name: **TP101** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Sample Depth: **0.10-0.40 m** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
Moisture content: **20%** Entry:
(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				6.2 pH		6.2 pH	6.2 pH		
Total:								0%		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: TP103



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

Sample details

Sample name:	LoW Code:
TP103	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.60-1.80 m	
Moisture content:	
17%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH		PH		5 pH		5 pH	5pH		
Total:								0%		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: TP106

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

Sample details

Sample name: **TP106** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Sample Depth: **0.50-2.30 m** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
Moisture content: **18%** Entry:
(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				9.9 pH		9.9 pH	9.9 pH		
Total:								0%		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: TP107

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

Sample details

Sample name:	LoW Code:
TP107	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.30-0.70 m	
Moisture content:	
12%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		7.4 pH		7.4 pH	7.4 pH		
2	arsenic { arsenic trioxide }				9.4 mg/kg	1.32	10.922 mg/kg	0.00109 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	0.3 mg/kg	1.285	0.339 mg/kg	0.0000264 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				100 mg/kg	1.462	128.617 mg/kg	0.0129 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				33 mg/kg	1.126	32.696 mg/kg	0.00327 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	100 mg/kg		88 mg/kg	0.0088 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				46 mg/kg	1.579	63.938 mg/kg	0.00639 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				80 mg/kg	2.469	173.838 mg/kg	0.0174 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		0.13 mg/kg		0.114 mg/kg	0.0000114 %	✓	
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		0.17 mg/kg		0.15 mg/kg	0.000015 %	✓	
18	pyrene	204-927-3	129-00-0		0.19 mg/kg		0.167 mg/kg	0.0000167 %	✓	
19	benzo[a]anthracene	200-033-00-9	56-55-3		0.07 mg/kg		0.0616 mg/kg	0.00000616 %	✓	
20	chrysene	205-048-00-0	218-01-9		0.11 mg/kg		0.0968 mg/kg	0.00000968 %	✓	
21	benzo[b]fluoranthene	205-034-00-4	205-99-2		0.1 mg/kg		0.088 mg/kg	0.0000088 %	✓	
22	benzo[k]fluoranthene	205-036-00-5	207-08-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	200-032-00-3	50-32-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		0.05 mg/kg		0.044 mg/kg	0.0000044 %	✓	
25	dibenz[a,h]anthracene	200-041-00-2	53-70-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		0.06 mg/kg		0.0528 mg/kg	0.00000528 %	✓	
27	benzene	200-020-00-8	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
28	toluene	203-021-00-3	108-88-3		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
29	ethylbenzene	202-023-00-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
30	xylene	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]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
Total:								0.0499 %		

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 Determinand - 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: TP112



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

Sample details

Sample name:	LoW Code:
TP112	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.30-0.70 m	
Moisture content:	
14%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		8.2 pH		8.2 pH	8.2 pH		
2	arsenic { arsenic trioxide }				9 mg/kg	1.32	10.219 mg/kg	0.00102 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				42 mg/kg	1.462	52.791 mg/kg	0.00528 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				18 mg/kg	1.126	17.429 mg/kg	0.00174 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	8.9 mg/kg		7.654 mg/kg	0.000765 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				46 mg/kg	1.579	62.485 mg/kg	0.00625 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				37 mg/kg	2.469	78.573 mg/kg	0.00786 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
18	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
Total:								0.0229 %		

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 Determinand - 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: TP115



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

Sample details

Sample name:	LoW Code:
TP115	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.50-2.10 m	
Moisture content:	
15%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		6 pH		6 pH	6pH		
2	arsenic { arsenic trioxide }				7.9 mg/kg	1.32	8.866 mg/kg	0.000887 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				33 mg/kg	1.462	40.997 mg/kg	0.0041 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				9.7 mg/kg	1.126	9.283 mg/kg	0.000928 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	7.7 mg/kg		6.545 mg/kg	0.000655 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				18 mg/kg	1.579	24.166 mg/kg	0.00242 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				28 mg/kg	2.469	58.769 mg/kg	0.00588 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
18	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
Total:								0.0149 %		

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 Determinand - 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: TP117

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

Sample details

Sample name:	LoW Code:
TP117	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.10-0.40 m	
Moisture content:	
23%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 23% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		6.4 pH		6.4 pH	6.4 pH		
2	arsenic { arsenic trioxide }				11 mg/kg	1.32	11.183 mg/kg	0.00112 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	0.7 mg/kg	1.285	0.693 mg/kg	0.0000539 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				22 mg/kg	1.462	24.759 mg/kg	0.00248 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				55 mg/kg	1.126	47.681 mg/kg	0.00477 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	34 mg/kg		26.18 mg/kg	0.00262 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				18 mg/kg	1.579	21.892 mg/kg	0.00219 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				61 mg/kg	2.469	115.983 mg/kg	0.0116 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
18	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
Total:								0.0248 %		

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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification



Classification of sample: TP120



Non Hazardous Waste

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

Sample details

Sample name:	LoW Code:	
TP120	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.40-2.00 m		
Moisture content:		
13%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				7.9 pH		7.9 pH	7.9 pH		
Total:								0%		

Key

	User supplied data
•	Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: TP124

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

Sample details

Sample name: **TP124** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Sample Depth: **1.60-2.00 m** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
Moisture content: **13%**
(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH		PH		5.5 pH		5.5 pH	5.5 pH		
Total:								0%		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: TP125

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

Sample details

Sample name:	LoW Code:
TP125	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.10-0.30 m	
Moisture content:	
23%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 23% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH		PH		6.1 pH		6.1 pH		6.1 pH		
2	arsenic { arsenic trioxide }				11 mg/kg	1.32	11.183 mg/kg		0.00112 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium sulfide }			1	0.8 mg/kg	1.285	0.792 mg/kg		0.0000616 %	✓	
	048-010-00-4	215-147-8	1306-23-6								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				19 mg/kg	1.462	21.383 mg/kg		0.00214 %	✓	
		215-160-9	1308-38-9								
5	copper { dicopper oxide; copper (I) oxide }				48 mg/kg	1.126	41.613 mg/kg		0.00416 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	62 mg/kg		47.74 mg/kg		0.00477 %	✓	
	082-001-00-6										
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg		<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
8	nickel { nickel dihydroxide }				19 mg/kg	1.579	23.108 mg/kg		0.00231 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
9	selenium { selenium compounds with the exception of cadmium selenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg		<0.000141 %		<LOD
	034-002-00-8										
10	zinc { zinc sulphate }				71 mg/kg	2.469	134.996 mg/kg		0.0135 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg		<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg		<0.000005 %		<LOD
		205-917-1	208-96-8								
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg		<0.000005 %		<LOD
		201-469-6	83-32-9								
14	fluorene				<0.05 mg/kg		<0.05 mg/kg		<0.000005 %		<LOD
		201-695-5	86-73-7								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		0.09 mg/kg		0.0693 mg/kg	0.00000693 %	✓	
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		0.16 mg/kg		0.123 mg/kg	0.0000123 %	✓	
18	pyrene	204-927-3	129-00-0		0.15 mg/kg		0.115 mg/kg	0.0000115 %	✓	
19	benzo[a]anthracene	200-033-00-9	200-280-6		0.08 mg/kg		0.0616 mg/kg	0.00000616 %	✓	
20	chrysene	601-048-00-0	205-923-4		0.12 mg/kg		0.0924 mg/kg	0.00000924 %	✓	
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.13 mg/kg		0.1 mg/kg	0.00001 %	✓	
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.07 mg/kg		0.0539 mg/kg	0.00000539 %	✓	
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	benzene	601-020-00-8	200-753-7		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
28	toluene	601-021-00-3	203-625-9		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
29	ethylbenzene	601-023-00-4	202-849-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
30	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
Total:								0.0281 %		

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 Determinand - 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: TP126



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

Sample details

Sample name:	LoW Code:	
TP126	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1.20-2.80 m		
Moisture content:		
11%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				7.5 pH		7.5 pH	7.5 pH		
Total:								0%		

Key

	User supplied data
•	Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: TP127

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

Sample details

Sample name: **TP127** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Sample Depth: **0.90-2.15 m** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
Moisture content: **15%** Entry:
(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				6.3 pH		6.3 pH	6.3 pH		
Total:								0%		

Key

• User supplied data
• Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: TP130



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

Sample details

Sample name:	LoW Code:	
TP130	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.40-2.30 m		
Moisture content:		
15%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				6.1 pH		6.1 pH	6.1 pH		
Total:								0%		

Key

	User supplied data
•	Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: TP131

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

Sample details

Sample name: **TP131** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Sample Depth: **0.60-1.60 m** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
Moisture content: **15%** Entry:
(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				8.3 pH		8.3 pH	8.3 pH		
Total:								0%		

Key

• User supplied data
• Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: TP133

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

Sample details

Sample name:	LoW Code:
TP133	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.10-0.30 m	
Moisture content:	
21%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 21% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		6.9 pH		6.9 pH	6.9 pH		
2	arsenic { arsenic trioxide }				20 mg/kg	1.32	20.861 mg/kg	0.00209 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	1.3 mg/kg	1.285	1.32 mg/kg	0.000103 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				19 mg/kg	1.462	21.938 mg/kg	0.00219 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				89 mg/kg	1.126	79.161 mg/kg	0.00792 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	100 mg/kg		79 mg/kg	0.0079 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				20 mg/kg	1.579	24.956 mg/kg	0.0025 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				99 mg/kg	2.469	193.124 mg/kg	0.0193 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		0.11 mg/kg		0.0869 mg/kg	0.00000869 %	✓	
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		0.15 mg/kg		0.119 mg/kg	0.0000119 %	✓	
18	pyrene	204-927-3	129-00-0		0.15 mg/kg		0.119 mg/kg	0.0000119 %	✓	
19	benzo[a]anthracene	200-033-00-9	200-280-6		0.08 mg/kg		0.0632 mg/kg	0.00000632 %	✓	
20	chrysene	601-048-00-0	205-923-4		0.12 mg/kg		0.0948 mg/kg	0.00000948 %	✓	
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.12 mg/kg		0.0948 mg/kg	0.00000948 %	✓	
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.06 mg/kg		0.0474 mg/kg	0.00000474 %	✓	
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	benzene	601-020-00-8	200-753-7		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
28	toluene	601-021-00-3	203-625-9		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
29	ethylbenzene	601-023-00-4	202-849-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
30	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
Total:								0.0421 %		

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 Determinand - 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: TP135



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

Sample details

Sample name:	LoW Code:
TP135	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.10-0.70 m	
Moisture content:	
30%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 30% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		6.4 pH		6.4 pH	6.4 pH		
2	arsenic { arsenic trioxide }				14 mg/kg	1.32	12.939 mg/kg	0.00129 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	0.8 mg/kg	1.285	0.72 mg/kg	0.000056 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				18 mg/kg	1.462	18.416 mg/kg	0.00184 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				47 mg/kg	1.126	37.042 mg/kg	0.0037 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	47 mg/kg		32.9 mg/kg	0.00329 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				16 mg/kg	1.579	17.69 mg/kg	0.00177 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium selenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				63 mg/kg	2.469	108.896 mg/kg	0.0109 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		0.08 mg/kg		0.056 mg/kg	0.0000056 %	✓	
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		0.12 mg/kg		0.084 mg/kg	0.0000084 %	✓	
18	pyrene	204-927-3	129-00-0		0.11 mg/kg		0.077 mg/kg	0.0000077 %	✓	
19	benzo[a]anthracene	200-033-00-9	200-280-6		0.07 mg/kg		0.049 mg/kg	0.0000049 %	✓	
20	chrysene	601-048-00-0	205-923-4		0.08 mg/kg		0.056 mg/kg	0.0000056 %	✓	
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.09 mg/kg		0.063 mg/kg	0.0000063 %	✓	
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	benzene	601-020-00-8	200-753-7		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
28	toluene	601-021-00-3	203-625-9		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
29	ethylbenzene	601-023-00-4	202-849-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
30	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
Total:								0.0229 %		

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 Determinand - 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:	LoW Code:	
WS101	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.40-1.70 m		
Moisture content:		
15%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	● pH				8.6 pH		8.6 pH	8.6 pH		
Total:								0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: WS102

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

Sample details

Sample name: **WS102** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Sample Depth: **2.00-2.45 m** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
Moisture content: **8.2%** Entry:
(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 8.2% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				7.3 pH		7.3 pH	7.3 pH		
Total:								0%		

Key

• User supplied data
• Determinand defined or amended by HazWasteOnline (see Appendix A)



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:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.10-0.60 m	
Moisture content:	
18%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		6.8 pH		6.8 pH	6.8 pH		
2	arsenic { arsenic trioxide }				39 mg/kg	1.32	42.224 mg/kg	0.00422 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				19 mg/kg	1.462	22.771 mg/kg	0.00228 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				160 mg/kg	1.126	147.717 mg/kg	0.0148 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	980 mg/kg		803.6 mg/kg	0.0804 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				110 mg/kg	1.579	142.471 mg/kg	0.0142 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				130 mg/kg	2.469	263.227 mg/kg	0.0263 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				0.08 mg/kg		0.0656 mg/kg	0.00000656 %	✓	
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		0.42 mg/kg		0.344 mg/kg	0.0000344 %	✓	
16	anthracene	204-371-1	120-12-7		0.09 mg/kg		0.0738 mg/kg	0.00000738 %	✓	
17	fluoranthene	205-912-4	206-44-0		0.7 mg/kg		0.574 mg/kg	0.0000574 %	✓	
18	pyrene	204-927-3	129-00-0		0.73 mg/kg		0.599 mg/kg	0.0000599 %	✓	
19	benzo[a]anthracene	601-033-00-9	200-280-6		0.49 mg/kg		0.402 mg/kg	0.0000402 %	✓	
20	chrysene	601-048-00-0	205-923-4		0.63 mg/kg		0.517 mg/kg	0.0000517 %	✓	
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.66 mg/kg		0.541 mg/kg	0.0000541 %	✓	
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.27 mg/kg		0.221 mg/kg	0.0000221 %	✓	
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.48 mg/kg		0.394 mg/kg	0.0000394 %	✓	
24	indeno[123-cd]pyrene	205-893-2	193-39-5		0.23 mg/kg		0.189 mg/kg	0.0000189 %	✓	
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.07 mg/kg		0.0574 mg/kg	0.00000574 %	✓	
26	benzo[ghi]perylene	205-883-8	191-24-2		0.33 mg/kg		0.271 mg/kg	0.0000271 %	✓	
27	TPH (C6 to C40) petroleum group		TPH		14 mg/kg		11.48 mg/kg	0.00115 %	✓	
28	benzene	601-020-00-8	200-753-7		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
29	toluene	601-021-00-3	203-625-9		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
30	ethylbenzene	601-023-00-4	202-849-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
31	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
Total:								0.144 %		

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 Determinand - 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 for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: Concentration too low to be considered flammable. Low concentrations of short chain hydrocarbons. Discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00115%)



Classification of sample: WS103[2]



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

Sample details

Sample name:	LoW Code:
WS103[2]	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.60-1.20 m	
Moisture content:	
18%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		7.3 pH		7.3 pH	7.3 pH		
2	arsenic { arsenic trioxide }				26 mg/kg	1.32	28.149 mg/kg	0.00281 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	1.9 mg/kg	1.285	2.002 mg/kg	0.000156 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				20 mg/kg	1.462	23.97 mg/kg	0.0024 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				52 mg/kg	1.126	48.008 mg/kg	0.0048 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	65 mg/kg		53.3 mg/kg	0.00533 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				43 mg/kg	1.579	55.693 mg/kg	0.00557 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium selenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				340 mg/kg	2.469	688.44 mg/kg	0.0688 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		0.16 mg/kg		0.131 mg/kg	0.0000131 %	✓	
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		0.08 mg/kg		0.0656 mg/kg	0.00000656 %	✓	
18	pyrene	204-927-3	129-00-0		0.08 mg/kg		0.0656 mg/kg	0.00000656 %	✓	
19	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	chrysene	601-048-00-0	205-923-4		0.07 mg/kg		0.0574 mg/kg	0.00000574 %	✓	
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
Total:								0.0899 %		

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 Determinand - 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: WS105



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

Sample details

Sample name:	LoW Code:
WS105	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.00-0.30 m	
Moisture content:	
18%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		7.8 pH		7.8 pH	7.8 pH		
2	arsenic { arsenic trioxide }				13 mg/kg	1.32	14.075 mg/kg	0.00141 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	0.9 mg/kg	1.285	0.949 mg/kg	0.0000738 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				20 mg/kg	1.462	23.97 mg/kg	0.0024 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				50 mg/kg	1.126	46.161 mg/kg	0.00462 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	46 mg/kg		37.72 mg/kg	0.00377 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				19 mg/kg	1.579	24.609 mg/kg	0.00246 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				89 mg/kg	2.469	180.209 mg/kg	0.018 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		0.05 mg/kg		0.041 mg/kg	0.0000041 %	✓	
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		0.08 mg/kg		0.0656 mg/kg	0.00000656 %	✓	
18	pyrene	204-927-3	129-00-0		0.08 mg/kg		0.0656 mg/kg	0.00000656 %	✓	
19	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	chrysene	601-048-00-0	205-923-4		0.06 mg/kg		0.0492 mg/kg	0.00000492 %	✓	
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.07 mg/kg		0.0574 mg/kg	0.00000574 %	✓	
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
Total:								0.0328 %		

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 Determinand - 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: WS107



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

Sample details

Sample name:	LoW Code:	
WS107	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.80-1.00 m		
Moisture content:		
11%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				6.4 pH		6.4 pH	6.4 pH		
Total:								0%		

Key

	User supplied data
•	Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: WS108

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

Sample details

Sample name:	LoW Code:
WS108	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.50-1.50 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
17%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				7.2 pH		7.2 pH	7.2 pH		
Total:								0%		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: WS109A

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

Sample details

Sample name:	LoW Code:
WS109A	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.00-0.50 m	
Moisture content:	
20%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		6.5 pH		6.5 pH	6.5 pH		
2	arsenic { arsenic trioxide }				15 mg/kg	1.32	15.844 mg/kg	0.00158 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	0.9 mg/kg	1.285	0.925 mg/kg	0.000072 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				21 mg/kg	1.462	24.554 mg/kg	0.00246 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				68 mg/kg	1.126	61.248 mg/kg	0.00612 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	53 mg/kg		42.4 mg/kg	0.00424 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				27 mg/kg	1.579	34.117 mg/kg	0.00341 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium selenide and those specified elsewhere in this Annex }				1.2 mg/kg	1.405	1.349 mg/kg	0.000135 %	✓	
	034-002-00-8									
10	zinc { zinc sulphate }				81 mg/kg	2.469	160.01 mg/kg	0.016 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		0.09 mg/kg		0.072 mg/kg	0.0000072 %	✓	
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		0.11 mg/kg		0.088 mg/kg	0.0000088 %	✓	
18	pyrene	204-927-3	129-00-0		0.1 mg/kg		0.08 mg/kg	0.000008 %	✓	
19	benzo[a]anthracene	200-280-6	56-55-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	chrysene	205-923-4	218-01-9		0.09 mg/kg		0.072 mg/kg	0.0000072 %	✓	
21	benzo[b]fluoranthene	205-911-9	205-99-2		0.07 mg/kg		0.056 mg/kg	0.0000056 %	✓	
22	benzo[k]fluoranthene	205-916-6	207-08-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	200-028-5	50-32-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	200-181-8	53-70-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
Total:								0.0341 %		

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 Determinand - 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: WS109A[2]


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

Sample details

Sample name:	LoW Code:	
WS109A[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.60-0.60 m		
Moisture content:		
16%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH PH				7.9 pH		7.9 pH	7.9 pH		
Total:								0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: WS110

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

Sample details

Sample name:	LoW Code:
WS110	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.00-0.40 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
20%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH				6.7 pH		6.7 pH	6.7 pH		
2	arsenic { arsenic trioxide }				8 mg/kg	1.32	8.45 mg/kg	0.000845 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	0.4 mg/kg	1.285	0.411 mg/kg	0.000032 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17 mg/kg	1.462	19.877 mg/kg	0.00199 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				31 mg/kg	1.126	27.922 mg/kg	0.00279 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	24 mg/kg		19.2 mg/kg	0.00192 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				13 mg/kg	1.579	16.427 mg/kg	0.00164 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium sulposelenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				44 mg/kg	2.469	86.919 mg/kg	0.00869 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
18	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
Total:								0.0179 %		

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 Determinand - 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: WS111

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

Sample details

Sample name:	LoW Code:
WS111	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.50-0.50 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
17%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH				6.4 pH		6.4 pH	6.4 pH		
2	arsenic { arsenic trioxide }				6.2 mg/kg	1.32	6.794 mg/kg	0.000679 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	0.2 mg/kg	1.285	0.213 mg/kg	0.0000166 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				14 mg/kg	1.462	16.983 mg/kg	0.0017 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				25 mg/kg	1.126	23.362 mg/kg	0.00234 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	12 mg/kg		9.96 mg/kg	0.000996 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				15 mg/kg	1.579	19.665 mg/kg	0.00197 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				42 mg/kg	2.469	86.08 mg/kg	0.00861 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
18	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
Total:								0.0163 %		

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 Determinand - 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: WS112

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

Sample details

Sample name: **WS112** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Sample Depth: **0.50-0.50 m** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
Moisture content: **18%** Entry:
(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				6.9 pH		6.9 pH	6.9 pH		
Total:								0%		

Key

• User supplied data
• Determinand defined or amended by HazWasteOnline (see Appendix A)



Classification of sample: WS112[2]



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

Sample details

Sample name:	LoW Code:
WS112[2]	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1.50-1.50 m	
Moisture content:	
15%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		7.4 pH		7.4 pH	7.4 pH		
2	arsenic { arsenic trioxide }				4.6 mg/kg	1.32	5.162 mg/kg	0.000516 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				32 mg/kg	1.462	39.754 mg/kg	0.00398 %	✓	
		215-160-9	1308-38-9							
5	copper { dicopper oxide; copper (I) oxide }				19 mg/kg	1.126	18.183 mg/kg	0.00182 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	8.5 mg/kg		7.225 mg/kg	0.000722 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel dihydroxide }				39 mg/kg	1.579	52.36 mg/kg	0.00524 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
10	zinc { zinc sulphate }				43 mg/kg	2.469	90.253 mg/kg	0.00903 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
18	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
Total:								0.0213 %		

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 Determinand - 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: TP135[2]



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

Sample details

Sample name:	LoW Code:
TP135[2]	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.10-0.70 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
30%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 30% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		6.4 pH		6.4 pH	6.4 pH		
2	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
3	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
4	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
5	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
6	phenanthrene				0.08 mg/kg		0.056 mg/kg	0.0000056 %	✓	
		201-581-5	85-01-8							
7	anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7							
8	fluoranthene				0.12 mg/kg		0.084 mg/kg	0.0000084 %	✓	
		205-912-4	206-44-0							
9	pyrene				0.11 mg/kg		0.077 mg/kg	0.0000077 %	✓	
		204-927-3	129-00-0							
10	benzo[a]anthracene				0.07 mg/kg		0.049 mg/kg	0.0000049 %	✓	
	601-033-00-9	200-280-6	56-55-3							
11	chrysene				0.08 mg/kg		0.056 mg/kg	0.0000056 %	✓	
	601-048-00-0	205-923-4	218-01-9							
12	benzo[b]fluoranthene				0.09 mg/kg		0.063 mg/kg	0.0000063 %	✓	
	601-034-00-4	205-911-9	205-99-2							
13	benzo[k]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
14	benzo[a]pyrene; benzo[def]chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
15	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5							
16	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
17	benzo[ghi]perylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2							



#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
18		benzene				<5 mg/kg		<5 mg/kg	<0.0005 %		<LOD
		601-020-00-8	200-753-7	71-43-2							
19		toluene				<5 mg/kg		<5 mg/kg	<0.0005 %		<LOD
		601-021-00-3	203-625-9	108-88-3							
20	●	ethylbenzene				<5 mg/kg		<5 mg/kg	<0.0005 %		<LOD
		601-023-00-4	202-849-4	100-41-4							
21		xylene				<8 mg/kg		<8 mg/kg	<0.0008 %		<LOD
		601-022-00-9	202-422-2 [1]	95-47-6 [1]							
			203-396-5 [2]	106-42-3 [2]							
			203-576-3 [3]	108-38-3 [3]							
			215-535-7 [4]	1330-20-7 [4]							
Total:									0.00003 %		

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)
<LOD	Below limit of detection



Classification of sample: WS109A[3]



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

Sample details

Sample name:	LoW Code:
WS109A[3]	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.00-0.50 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
20%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		7.7 pH		7.7 pH	7.7 pH		
2	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
3	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
4	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
5	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
6	phenanthrene				0.09 mg/kg		0.072 mg/kg	0.0000072 %	✓	
		201-581-5	85-01-8							
7	anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7							
8	fluoranthene				0.11 mg/kg		0.088 mg/kg	0.0000088 %	✓	
		205-912-4	206-44-0							
9	pyrene				0.1 mg/kg		0.08 mg/kg	0.000008 %	✓	
		204-927-3	129-00-0							
10	benzo[a]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
11	chrysene				0.09 mg/kg		0.072 mg/kg	0.0000072 %	✓	
	601-048-00-0	205-923-4	218-01-9							
12	benzo[b]fluoranthene				0.07 mg/kg		0.056 mg/kg	0.0000056 %	✓	
	601-034-00-4	205-911-9	205-99-2							
13	benzo[k]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
14	benzo[a]pyrene; benzo[def]chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
15	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5							
16	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
17	benzo[ghi]perylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2							



#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
18		benzene				<5 mg/kg		<5 mg/kg	<0.0005 %		<LOD
		601-020-00-8	200-753-7	71-43-2							
19		toluene				<5 mg/kg		<5 mg/kg	<0.0005 %		<LOD
		601-021-00-3	203-625-9	108-88-3							
20	●	ethylbenzene				<5 mg/kg		<5 mg/kg	<0.0005 %		<LOD
		601-023-00-4	202-849-4	100-41-4							
21		xylene				<8 mg/kg		<8 mg/kg	<0.0008 %		<LOD
		601-022-00-9	202-422-2 [1]	95-47-6 [1]							
			203-396-5 [2]	106-42-3 [2]							
			203-576-3 [3]	108-38-3 [3]							
			215-535-7 [4]	1330-20-7 [4]							
Total:									0.00003 %		

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)
<LOD	Below limit of detection



Classification of sample: WS01



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

Sample details

Sample name:	LoW Code:
WS01	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.10-0.40 m	
Moisture content:	
18%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH		PH		6.3 pH		6.3 pH	6.3 pH		
2	arsenic { arsenic trioxide }				21 mg/kg	1.32	22.736 mg/kg	0.00227 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium sulfide }			1	1.4 mg/kg	1.285	1.475 mg/kg	0.000115 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
4	chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				21 mg/kg	1.462	25.168 mg/kg	0.00252 %	✓	
		215-160-9	1308-38-9							
6	copper { dicopper oxide; copper (I) oxide }				87 mg/kg	1.126	80.321 mg/kg	0.00803 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	99 mg/kg		81.18 mg/kg	0.00812 %	✓	
	082-001-00-6									
8	mercury { mercury dichloride }				0.5 mg/kg	1.353	0.555 mg/kg	0.0000555 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
9	nickel { nickel dihydroxide }				28 mg/kg	1.579	36.265 mg/kg	0.00363 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				120 mg/kg	1.405	138.252 mg/kg	0.0138 %	✓	
	034-002-00-8									
11	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
12	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
13	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
14	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	phenanthrene	201-581-5	85-01-8		0.16 mg/kg		0.131 mg/kg	0.0000131 %	✓	
16	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	fluoranthene	205-912-4	206-44-0		0.35 mg/kg		0.287 mg/kg	0.0000287 %	✓	
18	pyrene	204-927-3	129-00-0		0.34 mg/kg		0.279 mg/kg	0.0000279 %	✓	
19	benzo[a]anthracene	200-280-6	56-55-3		0.17 mg/kg		0.139 mg/kg	0.0000139 %	✓	
20	chrysene	205-923-4	218-01-9		0.25 mg/kg		0.205 mg/kg	0.0000205 %	✓	
21	benzo[b]fluoranthene	205-911-9	205-99-2		0.26 mg/kg		0.213 mg/kg	0.0000213 %	✓	
22	benzo[k]fluoranthene	205-916-6	207-08-9		0.11 mg/kg		0.0902 mg/kg	0.00000902 %	✓	
23	benzo[a]pyrene; benzo[def]chrysene	200-028-5	50-32-8		0.22 mg/kg		0.18 mg/kg	0.000018 %	✓	
24	indeno[123-cd]pyrene	205-893-2	193-39-5		0.11 mg/kg		0.0902 mg/kg	0.00000902 %	✓	
25	dibenz[a,h]anthracene	200-181-8	53-70-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[ghi]perylene	205-883-8	191-24-2		0.12 mg/kg		0.0984 mg/kg	0.00000984 %	✓	
Total:								0.0387 %		

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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non GB MCL determinands

• pH (CAS Number: PH)

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

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

Description/Comments: Data from C&L Inventory Database
Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• lead compounds with the exception of those specified elsewhere in this Annex

GB MCL index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium
www.reach-lead.eu/substanceinformation.html. 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 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

• 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 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

• 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 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• 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 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

• 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 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• 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 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• 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 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410



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

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

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 Jul 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

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

GB MCL index number: 601-023-00-4

Description/Comments:

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

20 Nov 2021 - 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 May 2015

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

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

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}

Absence of hexavalent chromium indicates it unlikely that lead chromate is present within the site soils.

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

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

zinc {zinc sulphate}

Absence of hexavalent chromium indicates it unlikely that zinc chromate is present within the site soils.

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

Worst case species based on hazard statements

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.2.GB - Oct 2021**

HazWasteOnline Classification Engine Version: 2025.86.6540.11894 (27 Mar 2025)

HazWasteOnline Database: 2025.84.6536.11888 (25 Mar 2025)



This classification utilises the following guidance and legislation:

WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021

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 Waste 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

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021

GB MCL List v2.0 - version 2.0 of 20th October 2023

GB MCL List v3.0 - version 3.0 of 11th January 2024

GB MCL List v4.0 - version 4.0 of 2nd March 2024

GB MCL List v5.0 - version 5.0 of 26th June 2024

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Analytical Report Number : 25-006110

Project / Site name:	Halsnead Gardens	Samples received on:	11/02/2025
Your job number:	C5980	Samples instructed on/ Analysis started on:	11/02/2025
Your order number:	6137_C5980_MAS	Analysis completed by:	19/02/2025
Report Issue Number:	1	Report issued on:	19/02/2025
Samples Analysed:	2 soil samples - 2 leachate samples		

Signed:



Trevor Hill
Customer Service Advisor
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-006110
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number				448273	448274
Sample Reference				TP135	WS109A
Sample Number				ES	ES
Water Matrix				N/A	N/A
Depth (m)				0.10-0.70	0.00-0.50
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	30	20
Total mass of sample received	kg	0.1	NONE	0.7	0.7

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	6.4	7.7
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	4.7	2.3
Loss on Ignition @ 450°C	%	0.2	MCERTS	12	6
Acid Neutralisation Capacity	+/- mmol/kg	-9999	NONE	-2.9	1.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.08	0.09
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.12	0.11
Pyrene	mg/kg	0.05	MCERTS	0.11	0.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.08	0.09
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.09	0.07
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85
-------------------	-------	------	------	--------	--------

Petroleum Hydrocarbons

Mineral Oil (EC10 - EC40) EH_CU_1D_AL	mg/kg	10	NONE	< 10	< 10
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VOCs

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

Total BTEX	µg/kg	10	MCERTS	< 10	< 10
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Analytical Report Number: 25-006110
 Project / Site name: Halsnead Gardens
 Your Order No: 6137_C5980_MAS

Lab Sample Number				448273	448274
Sample Reference				TP135	WS109A
Sample Number				ES	ES
Water Matrix				N/A	N/A
Depth (m)				0.10-0.70	0.00-0.50
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

PCBs by GC-MS

PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	< 0.001
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	< 0.007

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Waste Acceptance Criteria Analytical Results

Report No:	25-006110					
					Client:	BSL
Location	Halsnead Gardens					
Lab Reference (Sample Number)	448273				Landfill Waste Acceptance Criteria	
Sampling Date	/ /				Limits	
Sample ID	TP135 ES				Inert Waste Landfill	Stable Non- reactive HAZARDOUS waste in non- hazardous Landfill
Depth (m)	0.10-0.70					
Solid Waste Analysis						
TOC (%)**	4.7				3%	5%
Loss on Ignition (%) **	12				--	10%
BTEX (µg/kg) **	< 10				6000	--
Sum of PCBs (mg/kg) **	< 0.007				1	--
Mineral Oil (mg/kg) EH, ID, CU, AL	< 10				500	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--
pH (units)**	6.4				--	>6
Acid Neutralisation Capacity (mmol / kg)	-2.9				--	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test	
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)	
Arsenic *	< 0.00100			< 0.0100	0.5	2
Barium *	0.0117			0.117	20	100
Cadmium *	< 0.000100			< 0.00100	0.04	1
Chromium *	0.0020			0.020	0.5	10
Copper *	0.0076			0.076	2	50
Mercury *	< 0.000500			< 0.00500	0.01	0.2
Molybdenum *	< 0.000400			< 0.00400	0.5	10
Nickel *	0.0020			0.020	0.4	10
Lead *	0.0023			0.023	0.5	10
Antimony *	< 0.0017			< 0.017	0.06	0.7
Selenium *	< 0.0040			< 0.040	0.1	0.5
Zinc *	0.0062			0.062	4	50
Chloride *	4.6			46	800	15000
Fluoride*	0.26			2.6	10	150
Sulphate *	6.4			64	1000	20000
TDS*	26			260	4000	60000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-
DOC	20.3			203	500	800
Leach Test Information						
Stone Content (%)	< 0.1					
Sample Mass (kg)	0.7					
Dry Matter (%)	70					
Moisture (%)	30					
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)						
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited						

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3. This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.
Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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Waste Acceptance Criteria Analytical Results

Waste Acceptance Criteria Analytical Results							
Report No:	25-006110						
					Client: BSL		
Location	Halsnead Gardens						
Lab Reference (Sample Number)	448274				Landfill Waste Acceptance Criteria		
Sampling Date	/ /				Limits		
Sample ID	WS109A ES				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Depth (m)	0.00-0.50						
Solid Waste Analysis							
TOC (%)**	2.3				3%	5%	6%
Loss on Ignition (%) **	6.0				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH, ID, CU, AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	7.7				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	1.7				--	To be evaluated	To be evaluated
Eluate Analysis		10:1		10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)					using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
		mg/l		mg/kg			
Arsenic *	< 0.00100			< 0.0100	0.5	2	25
Barium *	0.0144			0.144	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0022			0.022	0.5	10	70
Copper *	0.0066			0.066	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.000888			0.00888	0.5	10	30
Nickel *	0.0018			0.018	0.4	10	40
Lead *	0.0019			0.019	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	0.0053			0.053	0.1	0.5	7
Zinc *	0.0040			0.040	4	50	200
Chloride *	4.0			40	800	15000	25000
Fluoride*	0.47			4.7	10	150	500
Sulphate *	5.1			51	1000	20000	50000
TDS*	26			260	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	17.6			176	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.7						
Dry Matter (%)	80						
Moisture (%)	20						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.					* = UKAS accredited (liquid eluate analysis only)		
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation					** = MCFETS accredited		

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3. This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.
Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number : 25-006110

Project / Site name: Halsnead Gardens

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
448273	TP135	ES	0.10-0.70	Brown clay and loam with vegetation
448274	WS109A	ES	0.00-0.50	Brown clay and loam with gravel and vegetation

Analytical Report Number : 25-006110

Project / Site name: Halsnead Gardens

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047-PL	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025

Analytical Report Number : 25-006110

Project / Site name: Halsnead Gardens

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

Analytical Report Number : 25-006110

Project / Site name: Halsnead Gardens

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP135	ES	L	448273	a	Chloride 10:1 WAC	L082B	a
TP135	ES	L	448273	a	Dissolved organic carbon 10:1 WAC	L037B	a
TP135	ES	L	448273	a	Fluoride 10:1 WAC	L033B	a
TP135	ES	L	448273	a	Metals in leachate by ICP-OES	L039B	a
TP135	ES	L	448273	a	Monohydric phenols 10:1 WAC	L080-PL	a
TP135	ES	L	448273	a	Sample Preparation	L043B	a
TP135	ES	L	448273	a	Total dissolved solids 10:1 WAC	L031B	a
TP135	ES	L	448273	a	WAC Leachate 10:1	L043B	a
TP135	ES	S	448273	a	Acid neutralisation capacity of soil	L046B	a
TP135	ES	S	448273	a	BTEX and/or Volatile organic compounds in soil	L073B	a
TP135	ES	S	448273	a	Loss on ignition of soil @ 450°C	L047-PL	a
TP135	ES	S	448273	a	Moisture Content	L019B	a
TP135	ES	S	448273	a	PCB's By GC-MS in soil	L027B	a
TP135	ES	S	448273	a	Sample preparation	L019B	a
TP135	ES	S	448273	a	Soil Descriptions	L019B	a
TP135	ES	S	448273	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP135	ES	S	448273	a	Stones content of soil	L019B	a
TP135	ES	S	448273	a	Total organic carbon (Automated) in soil	L009B	a
TP135	ES	S	448273	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	a
TP135	ES	S	448273	a	pH at 20°C in soil	L005B	a
WS109A	ES	L	448274	a	Chloride 10:1 WAC	L082B	a
WS109A	ES	L	448274	a	Dissolved organic carbon 10:1 WAC	L037B	a
WS109A	ES	L	448274	a	Fluoride 10:1 WAC	L033B	a
WS109A	ES	L	448274	a	Metals in leachate by ICP-OES	L039B	a
WS109A	ES	L	448274	a	Monohydric phenols 10:1 WAC	L080-PL	a
WS109A	ES	L	448274	a	Sample Preparation	L043B	a
WS109A	ES	L	448274	a	Total dissolved solids 10:1 WAC	L031B	a
WS109A	ES	L	448274	a	WAC Leachate 10:1	L043B	a
WS109A	ES	S	448274	a	Acid neutralisation capacity of soil	L046B	a
WS109A	ES	S	448274	a	BTEX and/or Volatile organic compounds in soil	L073B	a
WS109A	ES	S	448274	a	Loss on ignition of soil @ 450°C	L047-PL	a
WS109A	ES	S	448274	a	Moisture Content	L019B	a
WS109A	ES	S	448274	a	PCB's By GC-MS in soil	L027B	a
WS109A	ES	S	448274	a	Sample preparation	L019B	a
WS109A	ES	S	448274	a	Soil Descriptions	L019B	a
WS109A	ES	S	448274	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
WS109A	ES	S	448274	a	Stones content of soil	L019B	a
WS109A	ES	S	448274	a	Total organic carbon (Automated) in soil	L009B	a
WS109A	ES	S	448274	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	a
WS109A	ES	S	448274	a	pH at 20°C in soil	L005B	a

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