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Geo-Environmental Report

Low Valley Farm, Pitt Street, Barnsley, S73 9PY

For

Harwood Estates

'Experience and expertise working in union'

enzygo.com

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Geo-Environmental Report

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For:	Harwood Estates.
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Author:	Steve Rhodes **Director**
Reviewer:	Richard Hamilton **Director of Geoenvironmental**

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Executive Summary

Proposed Development

The site is to be re-developed for residential use.

Investigation

Site investigation, desk study and a monitoring visit were undertaken by Enzygo Geoenvironmental Ltd. In July 2020.

Ground Conditions

Ground Conditions comprise topsoil like Made Ground over medium dense becoming dense with depth sandy silt and silty sand varying to firm sandy clay. Extremely weak siltstone was encountered at depth and occasional weathered coal seams. Shallow groundwater was not encountered.

Contamination

No contamination was identified.

Foundations

Spread foundations are considered however as shallow coal like mudstone have been encountered not worked and intact it is recommended that all foundations are reinforced.

Pavement Design

An equilibrium CBR of 3% is recommended. Soils are considered to be frost susceptible.

Buried Concrete

It is recommended that Class AC-1s conditions of Special Digest 1 are used for shallow soils.

Drainage

Soakaway drainage is not considered viable

Ground Gas and Radon

No radon or ground gas risk risks have been identified at the site. Additional monitoring is being undertaken.

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1.0 INTRODUCTION

Background

1.1 Harwood Estates are seeking to develop a site at Low Valley Farm, Pitt Street, Barnsley, S73 9PY.

Proposed Development

1.2 Harwood Estates are seeking to re-develop the site for residential use comprising domestic houses and gardens with associated infrastructure. The proposed development layout is shown on Drawing PO94270-103 prepared by JRP Architects, which is incorporated into Drawing CRM.1122.003.GE.D.002.

Objectives

1.3 The objectives of the study are to:

- Review a desk study report prepared previously;
- Undertake a targeted ground investigation;
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors; and
- Provide a factual and interpretative report relating to the desk study and site investigations.
- Provide a revised conceptual model and recommendations on any potential development issues and mitigation measures, where appropriate.
- Provide geotechnical recommendations in relation to foundations and infrastructure.

Risk Classification

1.4 Enzygo Geoenvironmental has utilised the available information, together with our experience to assess the likely risks to development from land quality issues. Definitions of the risk terms used are provided on the following table.

Risk	Description
Negligible	No contamination risk has been identified which is likely to affect development.
Low	No significant contaminated land risks have been encountered affecting development and a low risk that remediation will be required.
Low-Moderate	There are unlikely to be significant contaminated land issue associated with the site which will adversely affect its re-development. However, minor or localised contamination may be present requiring remediation. Remediation should be possible under a discovery strategy and with a call out service.
Moderate	Some potential contaminated land risks have been encountered or identified which may affect re- development. The risks identified are unlikely to affect the entire site or preclude development. Remediation is considered feasible as part of the development process and no further investigation is considered necessary.
Moderate-High	Some potentially significant contaminated land risks have been identified at the property that requires remediation. It is recommended that a separate remedial methodology is prepared supported by a site-specific risk assessment
High	Significant potential contaminated land risks have been identified and remediation is required supported by further intrusive ground investigation, risk assessment and remedial design.

1.5 Where adverse risks from ground instability are identified these are discussed within the report.

2.0 SITE SETTING

Site Description

Item	Description
Site Address	Low Valley Farm, Pitt Street, Barnsley, S73 9PY
National Grid Reference	440526,404159
Approximate Site Area	2.9 Ha

Current Site Description

2.1 The following site description has been compiled from the site inspection undertaken by Enzygo Geoenvironmental staff, during preparation of the Phase 1 Desk Study (ref CRM.1122.003.GE.R.001.A).

2.2 The site comprises a field which was vegetated with grass and occasional trees.

2.3 No evidence of tanks, waste or chemical storage were noted.

Surrounding Area

2.4 The surrounding land uses are sumarised as follows:

Direction	Land Use
South	Pitt Street with residential development beyond.
East	Residential development.
West	Residential development.
North	Field.

2.5 No significant sources of potential contamination were noted near to the site.

3.0 DESK STUDY INFORMATION

General

3.2 A Phase 1 Desk Study (ref CRM.1122.003.GE.R.001.A) was prepared for the site and pertinent information is summarized in the sections below:

Site History

3.2 A review of historical Ordnance Survey maps show the site to have been fields with no development on site. A colliery and associated restoration works are identified to the south of the site.

3.3 There are risks of ground gas associated with the restoration works. No other significant risks are identified to the site from the historical maps.

Ground Conditions

3.4 The British Geological Survey (BGS) indicates that the site is underlain by the following geological sequence:

Geological Unit	Type	Description	Aquifer Classification
Drift	None Present.	Not Applicable.	Not Applicable.
Solid	Pennine Middle Coal Measures.	Sandstone and Mudstone.	Secondary A.
	Acton Rock	Sandstone.	

Groundwater

3.5 Published permeability of the solid geology is high to low associated with fracture flow.

Coal Mining

3.6 The site is identified as being within an area of coal mining risk.

3.7 A Coal Mining report indicates that the site is underlain by eleven seams which has been worked below 160 depth and last worked in 1988.

3.8 Any movement of these workings should have ceased and given the depth of the workings will not affect the site.

3.9 There is no risk of shallow workings on the site.

3.10 There are no recorded opencast workings and no mining shafts within 25m of the site.

3.11 Darfield Main colliery is shown 500m west of the site which used three shafts to collect coal from deep workings below 150m depth. The seams worked comprise Beamshaw, Meltonfield, Winter. Given the depth and distance of these workings these are not considered a risk to the site.

3.13 The interactive coal authority website indicates that the site is not within a high risk development site area. However ta high risk development site is shown to the 200m east of the site.

3.14 BGS records indicate that the superficial materials in the area are not deeper than 2.00mbgl.

3.15 The risk of shallow and deep coal workings underneath the site has been dismissed.

Mining

3.17 A fireclay pit is identified on site. No other significant new risks from mining or surface ground works are identified.

Radon Risk Potential

3.18 The Groundsure GeoInsight Report indicates that the site is not within a Radon Affected Area. No radon protective measures are necessary in the construction of new dwellings.

Natural Hazards Finding

3.19 No significant risks are identified.

Industrial Land Uses

3.20 No significant risks are identified from the register of industrial land uses.

Regulatory Database

3.21 No significant risks are identified from the regulatory data base.

Landfill Sites and Waste Treatment Sites

3.22 There are no current or historic landfills identified within 250m of the site. No significant risks are identified from landfills or other waste activities.

4.0 PRELIMINARY CONCEPTUAL MODEL

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
Human Health					
Asbestos, hydrocarbons and metals.	On-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site Users	Negligible.	Significant contamination unlikely and can be dealt with as part of site development.
Asbestos, hydrocarbons and metals.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site users.	Negligible.	Significant contamination unlikely.
Hydrocarbon and metals.	Migration from off-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant source identified.
			Site users.		
Ground Gas.	Historic Landfills.	Inhalation & Explosive.	Construction Workers.	Dismissed.	No source identified.
			Site users.		
	Potential Made Ground.		Construction Workers.	Low.	Potential organic matter present in restoration works identified 10m south of the site. Given age the risk of significant ground gas is considered low.
			Site users.		
Groundwater					
Hydrocarbon and metals.	Potential spillage on site.	Vertical Migration.	Groundwater.	Dismissed.	No significant source identified.
Surface Water					
Hydrocarbon and metals.	Potential spillage on site.	Horizontal Migration.	River Network.	Dismissed.	No receptor identified.
Environmental Receptors					
On site contaminants		Ingestion dermal and inhalation.	Ecology.	Dismissed.	No sensitive ecology designation.
		Direct.	Archaeology.	Dismissed.	None present.
		Direct.	Geology.	Dismissed.	None present.
		Phytotoxic.	Woodland.	Dismissed.	No receptor.
		Phytotoxic.	Crops.	Dismissed.	No receptor.
		Ingestion dermal and inhalation.	Livestock.	Dismissed.	No source identified.
Building Services					
On site contaminants		Direct.	Historic Buildings.	Dismissed.	No receptors
		Direct.	Proposed Buildings.	Dismissed.	No source identified.
		Permeate into pipework.	Water Pipes.	Dismissed.	No source identified.

6.1 Low risk of ground gas is identified associated with off-site restoration works which will be assessed as part of the ground investigation.

5.0 SITE INVESTIGATION

General

5.1 A ground investigation was undertaken based on the findings of the desk study and proposed development layout.

Site Works

5.2 The site investigation works were undertaken between 10th and 13th July 2020, comprising ten window sampler boreholes (WS1 to WS10) and seven trial pits (TP1 to TP8). Trial Pit TP6 could not be excavated due to access restrictions.

5.3 The locations of the exploratory holes are shown on Drawing CRM.1122.003.GE.D.001 overlain with the existing site plan and Drawing CRM.1122.003.GE.D.002 overlain with the proposed development layout. The locations are also summarised below:

Rational	Exploratory Holes	Notes
Site Coverage.	WS1 to WS10 & TP1 to TP8	Across site.
Foundation Assessment.	WS1 to WS10.	Located below proposed buildings.
Potential Contamination.	WS1, WS4, TP1 to TP5 & TP7 TO TP8.	On or adjacent to soft landscape areas.
Former Fireclay Pit.	WS1.	Historic maps.
Proposed Attenuation Pond.	TP6	No access.
Pavement Design.	TP4	CBR tests.
Groundwater and gas monitoring.	WS1, WS2, WS3, WS4 & WS9.	Installations.

5.4 Representative soil samples were collected for chemical and geotechnical testing. Soil samples destined for chemical analysis were collected in appropriate containers provided by the analytical laboratory. Samples were stored in cool boxes prior to dispatch to the laboratory for analysis. All samples were collected using appropriate sampling equipment that was cleaned at each sampling location.

5.5 Generally samples were collected from Made Ground, which may contain potential inclusions of contaminating materials and materials displaying evidence of potential contamination.

5.6 In the absence of any evidence of contamination samples were collected near surface as this material is more likely to be contaminated by surface spillages and also will potentially be in contact with future residents.

Monitoring

5.7 Return visits to monitor groundwater levels from installations were undertaken and during these visits ground gas was also measured.

Laboratory Testing

5.8 Samples for geotechnical testing were sent to the laboratories of I2, which is UKAS accredited, for the following analysis:

- California Bearing Ratio (CBR) tests undertaken on re-compacted samples
- Atterberg Limits Determinations; and
- Soluble sulphate and pH.

5.9 Samples for chemical analysis were sent to the laboratories of laboratories of I2 who are UKAS and MCERTS accredited. Samples were tested for the CLEA metal suite, pH, sulphate, cyanide, phenols, speciated Polycyclic Aromatic Hydrocarbons (PAH), organic carbon, banded Total Petroleum Hydrocarbon (TPH) and asbestos screen.

5.10 As no specific contamination sources were identified on or near to the site, which is a greenfield site, a general suite of testing was undertaken.

6.0 GROUND AND GROUNDWATER CONDITIONS

Summary of Ground and Groundwater Conditions

6.1 The investigation undertaken identify the following strata:

Strata	Summary Description	Thickness (m)
Made Ground	Grass over brown clayey silt and gravelly clay with occasional fragments of flint, brick and ash.	0.2 to 0.4
Pennine Middle Coal Measures & Acton Rock.	Medium dense becoming dense with depth grey brown sandy silt and silty sand varying to firm sandy clay. Becoming extremely weak siltstone with depth and occasional weathered coal seams.	>3.2
Groundwater	Not encountered	Not Applicable.

6.2 Details of the ground and groundwater conditions encountered are given on the exploratory hole records included in Appendix A and are summarised in the sections below:

Made Ground

6.3 Made Ground was present across the site comprising brown clayey silt and gravelly clay with occasional fragments of flint, brick and ash. Generally this material was between and 0.2m and 0.4m thick comprising topsoil with inclusions of foreign material.

6.4 The soil is consistent with agricultural topsoil which includes foreign material.

Pennine Middle Coal Measures & Acton Rock

6.5 Natural soils were noted to comprise a variable material consisting of medium dense becoming dense with depth grey brown sandy silt and silty sand varying to firm sandy clay. This material is thought to represent the weathered Pennine Middle Coal Measures & Acton Rock. It was not possible to differentiate between the parent materials.

6.6 The Pennine Middle Coal Measures & Acton Rock was noted to become an extremely weak siltstone with depth.

6.7 Thin seams of weathered coal interbedded with mudstone were noted in exploratory holes WS4, WS7 and TP1. The coal seams were noted to be between 0.2m and 0.4m thick and do not appear to be restricted to specific areas of the site.

Visual and Olfactory Evidence of Contamination

6.8 No visual or olfactory evidence of contamination was encountered during the site works.

Soil Strength

6.9 Soils were noted to be medium dense becoming dense with depth. Typically SPT values increase from 11 at 1m bgl to over 50 at 3m bgl.

Groundwater

6.10 Groundwater was not encountered during the site investigation works. The depth to groundwater measured from installations during monitoring visits are summarised on the table below:

Exploratory Hole	Depth m(bgl)					
	24.7.20	31.7.20				
WS1	Dry	Dry				
WS2	Dry	Dry				
WS3	Dry	Dry				
WS4	2.94	2.94				
WS9	2.81	2.82				

Ground Gas

6.11 Ground gas was monitored during the return visits to monitor groundwater levels. Results are provided on the table below:

Exploratory Hole	Atmos pressure (Mb)	Flow (l/hr)	CH4		CO2		O2
			Concentration (%)	GSV (l/hr)	Concentration (%)	GSV (l/hr)	Concentration (%)
24.7.20							
WS1	999 (F)	<0.1	<0.1	<0.0001	2.0	<0.0020	18.8
WS2	999 (F)	<0.1	<0.1	<0.0001	2.2	<0.0022	18.3
WS3	999 (F)	<0.1	<0.1	<0.0001	1.7	<0.0017	19.2
WS4	999 (F)	<0.1	<0.1	<0.0001	2.5	<0.0025	18.7
WS9	999 (F)	<0.1	<0.1	<0.0001	3.2	<0.0048	18.1
9.7.20							
WS1	1001 (F)	<0.1	<0.1	<0.0001	1.8	<0.0018	19.0
WS2	1001 (F)	<0.1	<0.1	<0.0001	2.0	<0.0020	18.8
WS3	1001 (F)	<0.1	<0.1	<0.0001	1.9	<0.0019	10.1
WS4	1001 (F)	<0.1	<0.1	<0.0001	2.7	<0.0027	18.3
WS9	1001 (F)	<0.1	<0.1	<0.0001	3.1	<0.0031	18.3

6.12 Gas monitoring has not recorded significant elevated concentrations of Methane or Carbon Dioxide and no detectable gas flow rates have been measured. Additional gas monitoring is being undertaken.

7.0 CONTAMINATION ASSESSMENT

General

7.1 A Tier I risk assessment has been undertaken using available and current screening values for human health and where appropriate controlled waters. The risk assessment is undertaken based on the findings of the preliminary conceptual model presented in Section 6. Based on the contamination testing and Tier I assessment a revised Conceptual Model has been prepared, which is presented later in this section.

7.2 Where significant risks are identified remedial measures are recommended.

Human Health

7.3 Assessment of the risks to human health has been undertaken by comparing the soil quality data with reference values obtained from the Contaminated Land Exposure Assessment (CLEA), Soil Guideline Values (SGV) and General Acceptance Criteria (GAC) published by LQM/CIEH. The LQM/CIEH S4UL4 values are used and summary tables of the reference values are included in Appendix C.

7.4 Where an exceedance is identified the risk is assessed by considering the sensitivity of the proposed development and the potential pathway. As the site is to be developed includes residential houses the GAC for residential use with plant up-take are considered appropriate.

7.5 The soil quality shows no exceedances of the reference values for residential use with plant uptake

7.6 No asbestos fibres were detected.

Controlled Waters

7.7 Where groundwater samples have been analysed the results are compared against reference values. These reference values are summarised in Appendix B and are taken from Fresh Water Environmental Quality Standards (EQS), UK Drinking Water Standards and World Health Organisation (WHO) values for Drinking Water.

7.8 Where the controlled waters receptor is a surface water course then the EQS are used as the primary reference value. Drinking Water Standards and WHO values are used where EQS values are not available. An assessment of likely risk is then made based on a source-pathway-receptor model. Where the receptor is potable groundwater resources the Drinking Water Standards and WHO values are used.

7.9 The risk to surface water is dismissed due to the absence of receptors.

7.10 The risk to groundwater is dismissed due to the absence of any mobile sources.

Ground Gas

7.11 Following the guidance provided in Section 3 of CIRIA C665 an initial assessment is undertaken to determine if there are any significant sources of potential ground gas. Such sources include landfills, organic clays and made ground incorporating putrescible materials such as rags, paper and wood. Where no significant source is identified no further assessment is necessary.

7.12 This approach is further supported by supplementary guidance given in RB17, published by CL:AIRE which confirms that gas monitoring is not generally required on sites where Made Ground is less than 5m thick and with low organic matter content or on natural soils such as alluvial clays and Chalk as the ground gas sources are not considered significant. The supplementary guidance given in RB17 also takes account of the current requirements for sealing of floor slabs and substructures to meet air tightness requirements under Part L of the Building Regulations which were not considered in CIRIA C665. The advice given in RB17 is consistent with CIRIA C665 and the Local Authority Guide to Ground Gas published by CIEH.

7.13 Where significant potential risk from ground gas has been identified from the Initial Conceptual Model and the intrusive ground investigation works ground gas monitoring is undertaken and the results of the monitoring are compared against the Gas Screening Values given in CIRIA Report 665. From this the Characteristic Situation is identified and remedial measures proposed.

7.14 When assessing the risk and type of remedial measures appropriate consideration is given to the likely construction of the development, the nature of the gas posing a risk and the nature of the likely source. The use of engineering judgement when determining risk from ground gas is consistent with the recommendations given in CIRIA C665.

7.15 Monitoring has not recorded significant elevated concentrations of Methane or Carbon Dioxide and no detectable gas flow rates have been measured.

7.16 It is considered that Characteristic Situation 1 applies with no special precautions required. Additional monitoring is being undertaken.

Revised Conceptual Model

7.17 The Initial Conceptual Model presented in Section 6 has been revised based on the findings of the ground investigation and the revised Conceptual Model is presented below:

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
Human Health					
Asbestos, Hydrocarbon and metals.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal PPE will address risk.
			Site users.	Negligible.	No source identified.
Asbestos, Hydrocarbon and metals.	Current and historic uses.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No source identified.
			Site users.		
Hydrocarbon and metals.	Potential migration from off-site source.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant off-site sources identified.
			Site users.		
Ground Gas.	Historic Landfill.	Inhalation & Explosive.	Construction Workers.	Dismissed.	No significant source.
			Site users.		
	Potential Made Ground.	Inhalation & Explosive.	Construction Workers.	Dismissed.	No significant source identified, and no elevated gas flux measured.
			Site users.		
Groundwater					
Hydrocarbon and metals.	Potential spillage on site	Vertical Migration.	Groundwater	Dismissed.	No source.
Surface Water					
Hydrocarbon and metals.	Potential spillage on site	Horizontal Migration.	River Network	Dismissed.	No source or receptor.
Environmental Receptors					
On site contaminants		Ingestion dermal and inhalation.	Ecology.	Dismissed.	No sensitive ecology designation.
		Direct.	Archaeology.	Dismissed.	None present.
		Direct.	Geology.	Dismissed.	No sensitive receptor presents.
		Phytotoxic.	Woodland.	Dismissed.	None present.
		Phytotoxic.	Crops.	Dismissed.	No source identified.
		Ingestion dermal and inhalation.	Livestock.	Dismissed.	No source identified.
Building Services					
On site contaminants		Direct.	Historic Buildings.	Dismissed.	None present.
		Direct.	Proposed Buildings.	Dismissed.	No source identified.
		Permeate into pipework.	Water Pipes.	Dismissed.	No source identified.

Remediation

7.18 No remediation is considered necessary.

7.19 If unforeseen contamination is encountered during construction works an Environmental Consultant will be available on a 'call out' basis to undertake an assessment of risk. If 'unforeseen contamination' is encountered this will be discussed with the Local Planning Authority and remedial measures agreed prior to implementation. A validation report will be prepared should any remediation of unforeseen contamination be required in accordance with the NPPF.

Waste Classification

7.20 No exceedance above threshold values for TPH, PAH or TOC have been measured.

7.21 It is considered that Made Ground will be classified as Inert Waste.

7.22 The Waste Management paper 2 has recently been updated to version 3 which states that that sites which previously could be considered 'uncontaminated land' surplus soils if they did not exceed the GAC values now requires the landfill to make an appropriate assessment of the waste classification. As such final assessment, will be undertaken by the receiving landfill based on the requirements of their permit.

8.0 GEOTECHNICAL ASSESSMENT

Proposed Development

8.1 The proposed development comprises two storey residential houses. Structural loadings are not known but assumed to be 50 kN/m wall run.

8.2 It is considered that the scheme meets the criteria of Geotechnical Category 1 of Eurocode 7.

Ground Conditions

8.3 Ground Conditions comprise topsoil like Made Ground over medium dense becoming dense with depth sandy silt and silty sand varying to firm sandy clay. Extremely weak siltstone was encountered at depth and occasional weathered coal seams.

8.4 Shallow groundwater was not encountered.

Site Preparation

8.5 The site should be cleared and any vegetation below areas of proposed development stripped in accordance with Series 200 of the Specification for Highway Works. This should include:

- Any redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill;
- Tree root balls and soils with significant organic material should be grubbed out and replaced with appropriate compacted materials.

Foundations

8.6 Consideration has been given to the use of conventional strip foundations founding at a minimum depth of 1m bgl and at least 150mm into the medium dense natural soils using an allowable bearing capacity of 100kN/m^2. Settlements are estimated to be less than 25mm. Foundations should be locally deepened where soft clays or deeper Made Ground are encountered.

8.7 Given the recorded depth of the coal workings there is no reported risk associated with the coal mining, however shallow weathered coal like materials have been encountered these coal seams are only 0.20m thick and have not been worked. Given this there a risk of differential settlement and therefore it is recommended that all foundations are reinforced.

8.8 Modified plasticity index values show the soils to be of low to moderate volume change potential in accordance with NHBC requirements. Strip foundations will need to be deepened in accordance with requirements for building near trees assuming soils of moderate shrinkage potential.

Ground Floor Slab

8.9 It is considered that ground bearing floor slabs maybe used. Plate loading tests should be undertaken to confirm suitable modulas of subgrade reaction to allow design.

Pavement Construction

8.10 An assessment of the likely California Bearing Ratio (CBR) has been assessed from the following sources:

- Laboratory CBR tests undertaken on re-compacted soil samples;
- Description of the materials encountered in the exploratory holes; and
- Guidance given in HD25/94.

8.11 Based on the above it is considered that an equilibrium CBR of 3% is used.

8.12 It is recommended that the sub-formation is proof rolled with any soft materials being excavated and replaced with suitable compacted capping.

8.13 Soils are considered to be frost susceptible.

Drainage

8.14 Given the presence of low permeability soils below the site the use of soakaway drainage is not considered feasible.

Buried Concrete

8.15 Results of the sulphate testing indicate that shallow soils have soluble sulphate concentrations of less than 0.5 g/l consistent with DS1 Conditions. Using the pH data, it is considered that buried concrete can be deigned to Class AC1-s.

Excavation

8.16 Site observations show that excavations should be suitable with normal construction plant. Where access is required the excavations should be designed in accordance with CIRIA RR97.

8.17 No significant dewatering is anticipated for shallow excavations.



Key

- SIte Boundary
- Window Sampler Locations (WS) (WS1 - WS10)
- Trial Pit Locations (TP) (TP1 - TP5 & TP7)

enzygo environmental consultants

Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT: Hartwood Estates

SCALE: 1:1,250@A3

PROJECT REF: CRM.1122.003

DRAWN: MG

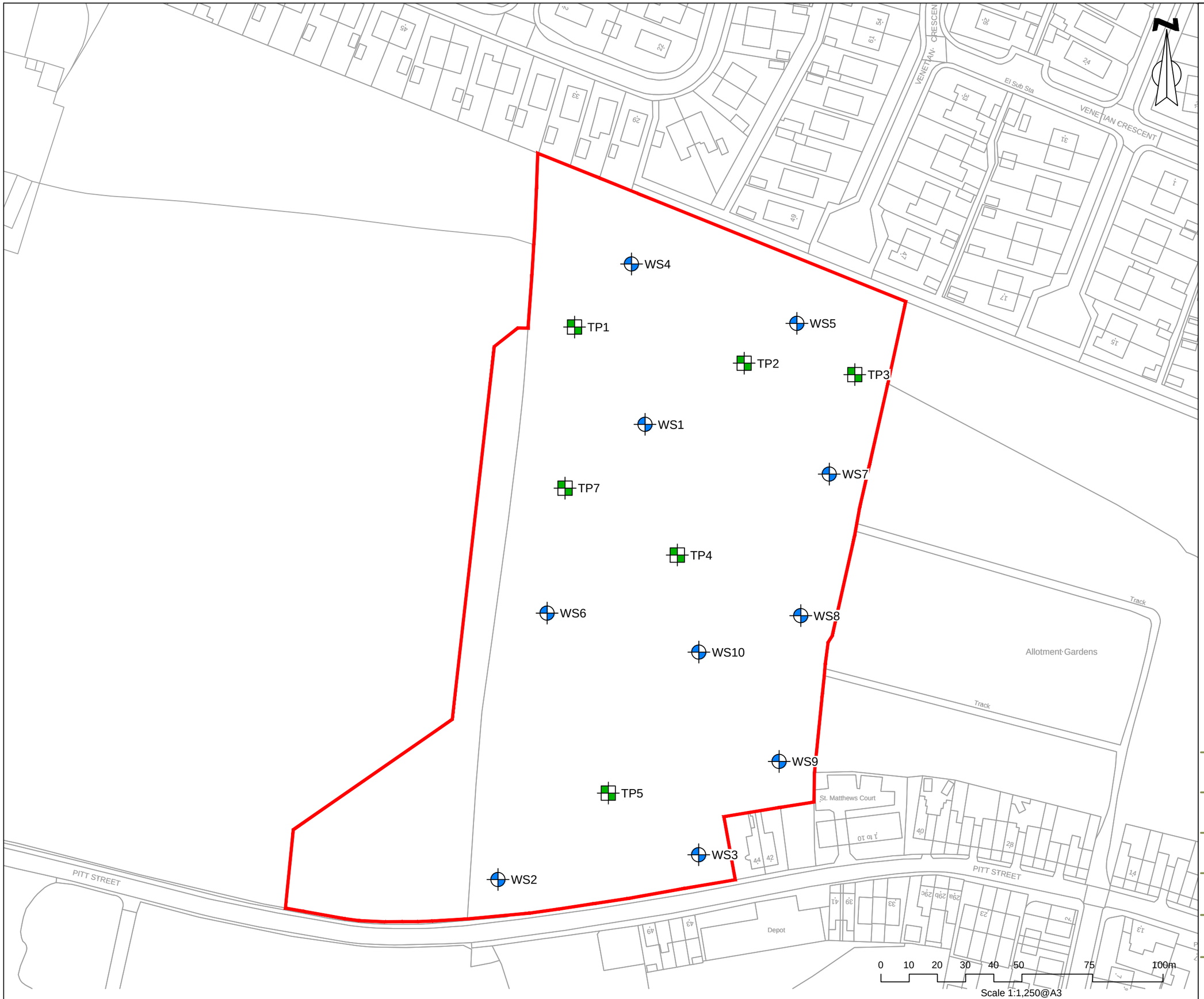
CHECKED: GP

DATE: July 2020

PROJECT: Pitt Street

TITLE: Proposed Location Plan

FIGURE NO: CRM.1122.003.GE.D.002



Key

- SIte Boundary
- Window Sampler Locations (WS) (WS1 - WS10)
- Trial Pit Locations (TP) (TP1 - TP5 & TP7)

enzygo environmental consultants

Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT: Hartwood Estates

SCALE: 1:1,250@A3

PROJECT REF: CRM.1122.003

DRAWN: MG

CHECKED: GP

DATE: July 2020

PROJECT: Pitt Street

TITLE: Existing Location Plan

FIGURE NO: CRM.1122.003.GE.D.001

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Site: Pitt Street, Barnsley

WS01

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 13-07-20 Finish 13-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.10	ES		0.35			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular, fine to coarse sandstone, brick and coal.
		0.50	D					(Firm) orangish brown slightly gravelly sandy SILT. Gravel is angular fine to coarse sandstone.
		1.00 - 1.45	D SPTLS	S 12				1.00 - 1.45 Firm, medium strength.
		1.60	D		1.60			Extremely weak, very thinly and thinly bedded brownish grey SILTSTONE.
		1.70 - 2.12	D SPTLS	S 50	2.12			1.70 - 2.12 Very dense. Refused at 2.12m begl.
					{8.00}			Borehole completed at 2.12m.

0 1 2 3 4 5 6 7 8

General Remarks

EQUIPMENT: Competitor 130 compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-1.70m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 1.50m begl, granular response zone (1.50m-0.50m), bentonite seal 0.50m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By: DJ

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Site: Pitt Street, Barnsley

WS02

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 13-07-20 Finish 13-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.30	ES		0.40			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular fine to coarse sandstone and brick.
		0.80	D					Orangish brown slightly silty gravelly fine and medium SAND. Gravel is angular and subangular, fine to coarse sandstone.
		1.00 - 1.45	D SPTLS	S 15				1.00 - 1.45 Medium dense.
		1.50	D		1.40			Brownish grey slightly gravelly silty fine and medium SAND. Gravel is angular and subangular, fine to coarse sandstone.
		2.00 - 2.43	D SPTLS	S 50				2.00 - 2.43 Very dense. Refused at 2.425m begl.
					2.43			Borehole completed at 2.43m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks

EQUIPMENT: Competitor 130 compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-2.00m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 2.00m begl, granular response zone (2.00m-0.50m), bentonite seal 0.50m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By: DJ

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Site: Pitt Street, Barnsley

WS03

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 14-07-20 Finish 14-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	Samples & In Situ Testing: No/Type	Samples & In Situ Testing: Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.25	ES		0.20			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular, fine to coarse sandstone, siltstone and brick.
		0.70	D		0.50			MADE GROUND: Orangish brown slightly silty gravelly fine and medium SAND with rare rootlets (up to 1mm diameter). Gravel is angular sandstone and brick.
		1.00 - 1.45	D SPTLS	S 11				(Firm to stiff) indistinctly structured orangish brown mottled brownish grey slightly gravelly sandy SILT. Gravel is angular fine to medium siltstone and sandstone. 1.00 - 1.45 Firm, medium strength.
		1.90 2.00 - 2.11	D D SPTLS	S 50	1.80 2.11			Extremely weak, very thinly and thinly bedded brownish grey SILTSTONE. 2.00 - 2.11 Very dense. Refused at 2.11m begl.
					{8.00}			Borehole completed at 2.11m.

0 1 2 3 4 5 6 7 8

General Remarks

EQUIPMENT: Competitor 130 compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-2.00m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 2.00m begl, granular response zone (2.00m-0.50m), bentonite seal 0.50m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By: DJ

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Site: Pitt Street, Barnsley

WS04

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 13-07-20 Finish 13-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.20	ES		0.30			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular fine to coarse sandstone, brick and coal.
		0.70	D					(Soft to firm) indistinctly structured orangish brown mottled brownish grey slightly gravelly sandy CLAY with frequent roots (up to 4mm diameter). Gravel is angular, fine to coarse sandstone and siltstone.
		1.00 - 1.45	D SPTLS	S 10				1.00 - 1.45 Firm, medium strength.
					1.30			(Firm to stiff) indistinctly structured brownish grey sandy SILT with frequent black speckling and orangish brown staining.
		2.00 - 2.45	D SPTLS	S 21	2.10			2.00 - 2.45 Stiff, high strength.
		2.70	D					(Stiff) indistinctly structured dark grey slightly gravelly sandy SILT with frequent black speckling and orangish brown staining. Gravel is angular, fine to coarse siltstone and coal.
		3.00 - 3.22	D SPTLS	S 50	3.00			Weathered COAL seam.
					3.22			3.00 - 3.22 Very dense. Refused at 3.22m begl.
								Borehole completed at 3.22m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks

EQUIPMENT: Competitor 130 compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-3.00m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 3.00m begl, granular response zone (3.00m-0.50m), bentonite seal 0.50m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By: DJ

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WS05

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 13-07-20 Finish 13-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.30	ES		0.30			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular fine to coarse sandstone and brick.
		0.50	D					Orangish brown locally brownish grey slightly gravelly silty fine and medium SAND with frequent rootlets (up to 3mm diameter). Gravel is angular fine to coarse sandstone.
		1.00 - 1.45	D SPTLS	S 10	0.90			(Firm to stiff) indistinctly structured brownish grey and grey slightly gravelly sandy SILT with frequent black speckling and orangish brown staining. Gravel is angular fine to coarse siltstone. 1.00 - 1.45 Firm, medium strength.
		1.60	D					
		2.00 - 2.44	D SPTLS	S 50				2.00 - 2.44 Very stiff, very high strength. Refused at 2.435m begl.
					2.44			Borehole completed at 2.44m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks

EQUIPMENT: Competitor 130 compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-2.00m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, the borehole was backfilled with arisings.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By: DJ

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WS06

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 13-07-20 Finish 13-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.20	ES		0.40			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular and subangular, fine to coarse sandstone.
		0.60	D		0.80			Orangish brown locally yellowish brown slightly silty gravelly fine and medium SAND. Gravel is angular fine to coarse sandstone.
		1.00 - 1.45	D SPT	C 16				(Soft to firm) orangish brown slightly gravelly sandy SILT. Gravel is angular fine to coarse sandstone and siltstone. 1.00 - 1.45 Stiff, medium strength.
		1.50	D					
		2.00 - 2.42	D SPT	C 50				2.00 - 2.42 Very stiff, very high strength. Refused at 2.415m begl.
					2.42			Borehole completed at 2.42m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks

EQUIPMENT: Competitor 130 compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-2.00m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, the borehole was backfilled with arisings.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By: DJ

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WS07

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 13-07-20 Finish 13-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.10	ES		0.30			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular fine to coarse sandstone, brick and coal.
		0.60	D					(Firm) indistinctly structured orangish brown mottled brownish grey slightly gravelly sandy SILT with frequent black speckling and orangish brown staining. Gravel is angular, fine to coarse siltstone
		1.00 - 1.45	D SPT	C 14	1.10			1.00 - 1.45 Firm, medium strength.
		1.60	D					(Firm to stiff) indistinctly structured brownish grey and grey slightly gravelly sandy SILT with frequent black speckling and orangish brown staining. Gravel is angular, fine to coarse siltstone and coal.
		2.00 - 2.43	D SPT	C 50	1.95			Weathered COAL seam. 2.00 - 2.43 Very dense. Refused at 2.43m begl.
					2.43			Borehole completed at 2.43m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks

EQUIPMENT: Competitor 130 compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-2.00m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, the borehole was backfilled with arisings.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By: DJ

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WS08

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 13-07-20 Finish 13-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.20	ES		0.30			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular, fine to coarse brick and sandstone.
		0.80	D					(Firm) indistinctly structured orangish brown mottled brownish grey slightly gravelly sandy SILT with frequent black speckling and orangish brown staining. Gravel is angular fine to medium siltstone.
		1.00 - 1.45	D SPTLS	S 11				1.00 - 1.45 Firm, medium strength.
		1.60	D		1.50			Extremely weak, very thinly and thinly bedded brownish grey SILTSTONE.
		2.00 - 2.44	D SPTLS	S 50				2.00 - 2.44 Very dense. Refused at 2.435m begl.
					2.44			Borehole completed at 2.44m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks

EQUIPMENT: Competitor 130 compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-2.00m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, the borehole was backfilled with arisings.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By: DJ

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Site: Pitt Street, Barnsley

WS09

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 13-07-20 Finish 13-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.10	ES		0.25			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular, fine to coarse sandstone and brick.
		0.50	D					Orangish brown mottled brownish grey slightly silty gravelly fine and medium SAND. Gravel is angular and subangular, fine to coarse sandstone.
		1.00 - 1.45	D SPTLS	S 25				1.00 - 1.45 Medium dense.
		1.50	D					
		2.00 - 2.45	D SPTLS	S 33	1.90			(Stiff) thinly laminated brownish grey slightly gravelly sandy SILT. Gravel is angular fine to coarse siltstone. 2.00 - 2.45 Very stiff, high strength.
		2.50	D					
		3.00 - 3.41	D SPTLS	S 50				3.00 - 3.41 Very stiff, very high strength. Refused at 3.405m begl.
					3.41			Borehole completed at 3.41m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks

EQUIPMENT: Competitor 130 compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-3.00m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 3.00m begl, granular response zone (3.00m-0.50m), bentonite seal 0.50m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By: DJ

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WS10

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 14-07-20 Finish 14-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.20 0.40	ES D		0.30			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular, fine to coarse sandstone and brick.
					0.70			(Firm) indistinctly structured brownish grey slightly gravelly sandy SILT. Gravel is angular fine to coarse siltstone.
		1.00 - 1.45	D SPTLS	S 10				Extremely weak, very thinly and thinly bedded orangish brown SANDSTONE with frequent black speckling and orangish brown staining with local clay infill, and thin bands of fine to medium sand. 1.00 - 1.45 Loose to medium dense.
		1.60	D					
		2.00 - 2.45	D SPTLS	S 37				2.00 - 2.45 Dense.
		2.40 2.50 - 2.80	D D SPTLS	S 50				2.50 - 2.80 Very dense. Refused at 2.795m begl.
					2.80			Borehole completed at 2.80m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks

EQUIPMENT: Competitor 130 compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-2.50m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, the borehole was backfilled with arisings.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By: DJ

1.0 ENZYGO WS LOG CRM.1122.033 BARNSLEY.GPJ GINT STD AGS 3_1 ENZYGO.GPJ 26/7/20

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Site: Pitt Street, Barnsley

TP01

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 10-07-20 Finish 10-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
	0.20	ES		0.30			MADE GROUND: Grass and vegetation over (soft to firm) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 2mm diameter). Gravel is angular fine to coarse sandstone.
	0.60	D		0.70			Orangish brown locally brownish grey slightly gravelly silty fine and medium SAND. Gravel is angular and subangular, fine to coarse sandstone.
	1.00	D		1.40			(Firm) orangish brown mottled brownish grey slightly sandy silty CLAY.
	1.60	D		1.80			Weathered COAL seam locally interbedded with siltstone.
	2.00	D		2.40			(Firm to stiff) indistinctly structured brownish grey mottled orangish brown slightly gravelly sandy SILT. Gravel is angular and subangular, fine to coarse sandstone.
				2.70			Extremely weak and very weak, very thinly and thinly bedded orangish brown and grey micaceous fine and medium-grained SANDSTONE.
				{4.00}			Trial Pit completed at 2.70m.

0 1 2 3 4

General Remarks

Dimensions: 2.60x0.70x2.70
1. Machine excavated pit from ground level to 2.70m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field interpretation.
5. On completion, trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: DJ

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Site: Pitt Street, Barnsley

TP02

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 10-07-20 Finish 10-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
				0.00			MADE GROUND: Grass and vegetation over (soft to firm) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 2mm diameter). Gravel is angular fine to coarse sandstone.
	0.30	ES					
	0.50	D		0.40			(Firm to stiff) indistinctly structured orangish brown mottled brownish grey slightly gravelly sandy SILT with frequent rootlets (up to 3mm diameter). Gravel is angular and subangular, fine to coarse sandstone.
				1.00			(Stiff) indistinctly structured grey mottled orangish brown slightly sandy clayey SILT with frequent rootlets (up to 3mm diameter).
	1.50	D					
				2.00			Extremely weak, very thinly and thinly bedded greyish brown SILTSTONE with frequent dark brown staining.
	2.20	D					
	3.20	D					
				3.40			Trial Pit completed at 3.40m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 3.00x0.70x3.40
1. Machine excavated pit from ground level to 3.40m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field interpretation.
5. On completion, trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: DJ

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Site				
Pitt Street, Barnsley				**TP03**
Job No: CRM.1122.033	Dates: Start 10-07-20, Finish 10-07-20	Ground Level (m)	Co-Ordinates	
Client: Hartwood Estates				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
	0.10	ES					MADE GROUND: Grass and vegetation over (soft to firm) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 2mm diameter). Gravel is angular fine to coarse sandstone and siltstone.
				0.30			
	0.40	D					(Soft to firm) orangish brown mottled brownish grey sandy SILT.
				0.80			
	1.00	D					(Soft to firm) dark brown and grey slightly gravelly very sandy SILT. Gravel is angular, fine to coarse siltstone and sandstone.
				1.90			
	2.00	D					Extremely weak and very weak, very thinly and thinly bedded grey and orangish brown micaceous fine and medium-grained SANDSTONE.
				2.80			Trial Pit completed at 2.80m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 3.00x0.70x2.80
1. Machine excavated pit from ground level to 2.80m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field interpretation.
5. On completion, trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25		Logged By DJ

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Site: Pitt Street, Barnsley

TP04

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1122.033	Start 10-07-20 Finish 10-07-20		

Client: Hartwood Estates

Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
	0.10	ES		0.20			MADE GROUND: Grass and vegetation over (soft) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 3mm diameter). Gravel is angular fine to coarse sandstone and siltstone.
	0.50	D		0.60			Orangish brown slightly silty gravelly fine to medium SAND. Gravel is angular and subangular, fine to coarse sandstone.
							Extremely weak and very weak, very thinly and thinly bedded orangish brown micaceous fine and medium-grained SANDSTONE.
	1.50	D		1.50			Extremely weak and very weak, very thinly and thinly bedded brownish grey and grey micaceous fine and medium-grained SANDSTONE.
	2.00	D					
				2.80			Trial Pit completed at 2.80m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: xx2.80
1. Machine excavated pit from ground level to 2.80m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field interpretation.
5. On completion, trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: DJ

1.1 ENZYGO TP LOG CRM.1122.033 BARNSLEY.GPJ GINT STD AGS 3_1 ENZYGO.GPJ 26/7/20

Enzygo Ltd
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Site				
Pitt Street, Barnsley				**TP05**
Job No: CRM.1122.033	Dates: Start 10-07-20, Finish 10-07-20	Ground Level (m)	Co-Ordinates	
Client: Hartwood Estates				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
	0.30	ES		0.40			MADE GROUND: Grass and vegetation over (soft to firm) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 2mm diameter). Gravel is angular fine to coarse sandstone and siltstone.
	1.00	D		1.40			Extremely weak and very weak, very thinly and thinly bedded orangish brown micaceous fine and medium-grained SANDSTONE.
	2.00	D		2.40			Extremely weak and very weak, very thinly and thinly bedded greyish brown SILTSTONE with frequent dark brown staining.
				{4.00}			Trial Pit completed at 2.40m.

0 1 2 3 4

General Remarks

Dimensions: 2.70x0.70x2.40
1. Machine excavated pit from ground level to 2.40m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field interpretation.
5. On completion, trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25		Logged By DJ

1.1 ENZYGO TP LOG CRM.1122.033 BARNSLEY.GPJ GINT STD AGS 3_1 ENZYGO.GPJ 26/7/20

Enzygo Ltd
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Site				
Pitt Street, Barnsley				**TP07**
Job No: CRM.1122.033	Dates: Start 10-07-20, Finish 10-07-20	Ground Level (m)	Co-Ordinates	
Client: Hartwood Estates				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
	0.20	ES		0.30			MADE GROUND: Grass and vegetation over (soft to firm) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 2mm diameter). Gravel is angular fine to coarse sandstone.
	0.40	D					(Firm to stiff) indistinctly structured orangish brown mottled brownish grey slightly gravelly sandy SILT. Gravel is angular and subangular, fine to coarse sandstone.
	1.40	D		1.20			Extremely weak to very weak, very thinly and thinly bedded grey orangish brown and grey micaceous fine and medium-grained SANDSTONE.
				1.95			Could not advance trial pit further. Trial Pit completed at 1.95m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 2.00x0.70x1.95
1. Machine excavated pit from ground level to 1.95m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field interpretation.
5. On completion, trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25		Logged By DJ

1.1 ENZYGO TP LOG CRM.1122.033 BARNSLEY.GPJ GINT STD AGS 3_1 ENZYGO.GPJ 26/7/20

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Site				
Pitt Street, Barnsley				**TP08**
Job No: CRM.1122.033	Dates: Start 10-07-20, Finish 10-07-20	Ground Level (m)	Co-Ordinates	
Client: Hartwood Estates				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
	0.30	ES		0.30			MADE GROUND: Grass and vegetation over (soft to firm) dark brown slightly gravelly sandy CLAY with frequent roots and rootlets (up to 2mm diameter). Gravel is angular fine to coarse sandstone.
	0.50	D					(Firm to stiff) indistinctly structured orangish brown mottled brownish grey slightly gravelly sandy SILT. Gravel is angular and subangular, fine to coarse sandstone.
				1.20			Extremely weak and very weak, very thinly and thinly bedded orangish brown and grey micaceous fine and medium-grained SANDSTONE.
	1.60	D					
				1.80			Could not advance trial pit further. Trial Pit completed at 1.80m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 2.40x0.70x1.80
1. Machine excavated pit from ground level to 1.80m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field interpretation.
5. On completion, trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25		Logged By DJ

1.1 ENZYGO TP LOG CRM.1122.033 BARNSLEY.GPJ GINT STD AGS 3_1 ENZYGO.GPJ 26/7/20

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Analytical Report Number : 20-19797

Project / Site name:	Pitt Street	**Samples received on:**	13/07/2020
Your job number:	CRM.1122.003	**Sample instructed/ Analysis started on:**	15/07/2020
Your order number:		**Analysis completed by:**	28/07/2020
Report Issue Number:	1	**Report issued on:**	30/07/2020
Samples Analysed:	9 soil samples		

Signed:

Joanna Wawrzeczko
Technical Reviewer (Reporting Team)

For & on behalf of i2 Analytical Ltd.

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

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

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

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

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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.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 20-19797

Project / Site name: Pitt Street

Lab Sample Number				1564746	1564747	1564748	1564749	1564750
Sample Reference				WS1	WS4	TP1	TP2	TP3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.20	0.20	0.30	0.10
Date Sampled				13/07/2020	13/07/2020	13/07/2020	13/07/2020	13/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	15	17	16	14	18
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.7	1.5	1.7
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.7	6.9	7.1	5.9	6.8
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.019	-	-	-	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.1	1.9	2.3	2.5	1.9
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	24	27	25	24	22
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	0.4	0.8	1.0	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.4	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	26	25	27	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	28	31	32	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	51	49	59	56	46
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.5	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	26	25	28	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	2.7	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	95	87	95	110	84

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Analytical Report Number: 20-19797

Project / Site name: Pitt Street

Lab Sample Number				1564746	1564747	1564748	1564749	1564750
Sample Reference				WS1	WS4	TP1	TP2	TP3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.20	0.20	0.30	0.10
Date Sampled				13/07/2020	13/07/2020	13/07/2020	13/07/2020	13/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH (>C5 - C7)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (>C7 - C8)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH (C12 - C16)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
TPH (C16 - C21)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C21 - C35)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C35 - C44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH Total C5 - C44	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

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Analytical Report Number: 20-19797

Project / Site name: Pitt Street

Lab Sample Number				1564751	1564752	1564753	1564754	
Sample Reference				TP4	TP5	TP7	TP8	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.10	0.30	0.20	0.30	
Date Sampled				13/07/2020	13/07/2020	13/07/2020	13/07/2020	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	12	11	11	12	
Total mass of sample received	kg	0.001	NONE	1.7	1.7	1.7	1.7	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.1	6.8	7.1	7.1	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.018	-	-	0.019	
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.6	2.0	2.1	1.9	
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.47	0.45	0.31	
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.39	0.36	0.27	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.23	0.22	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.29	0.30	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.27	0.38	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.15	0.10	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.20	0.22	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	2.00	2.03	< 0.80	
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	20	21	20	
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	0.6	0.5	0.8	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	22	30	25	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	24	22	23	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	39	48	46	46	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	25	27	27	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	77	91	86	92	

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Lab Sample Number				1564751	1564752	1564753	1564754	
Sample Reference				TP4	TP5	TP7	TP8	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.10	0.30	0.20	0.30	
Date Sampled				13/07/2020	13/07/2020	13/07/2020	13/07/2020	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	16	< 10	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	27	< 10	< 10	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	43	< 10	< 10	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	43	< 10	< 10	
TPH (>C5 - C7)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH (>C7 - C8)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	
TPH (C12 - C16)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
TPH (C16 - C21)	mg/kg	1	MCERTS	< 1.0	16	< 1.0	< 1.0	
TPH (C21 - C35)	mg/kg	1	MCERTS	< 1.0	27	< 1.0	< 1.0	
TPH (C35 - C44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	
TPH Total C5 - C44	mg/kg	10	NONE	< 10	43	< 10	< 10	

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 20-19797

Project / Site name: Pitt Street

* 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 *
1564746	WS1	None Supplied	0.10	Brown loam and clay with gravel and vegetation.
1564747	WS4	None Supplied	0.20	Brown loam and clay with gravel and vegetation.
1564748	TP1	None Supplied	0.20	Brown loam and clay with gravel and vegetation.
1564749	TP2	None Supplied	0.30	Brown loam and clay with gravel and vegetation.
1564750	TP3	None Supplied	0.10	Brown loam and clay with gravel and vegetation.
1564751	TP4	None Supplied	0.10	Brown loam and clay with gravel and vegetation.
1564752	TP5	None Supplied	0.30	Brown loam and clay with gravel and vegetation.
1564753	TP7	None Supplied	0.20	Brown loam and clay with gravel and vegetation.
1564754	TP8	None Supplied	0.30	Brown loam and clay with gravel and vegetation.

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Analytical Report Number : 20-19797

Project / Site name: Pitt Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	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.	In house method.	L009-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

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

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The results included within the report relate only to the sample(s) submitted for testing.

Determinant	Units	GAC Value Residential					
		With Plant Uptake			Without Plant Uptake		
Arsenic	mg/kg	37			40		
Cadmium	mg/kg	11			85		
Chromium	mg/kg	910			910		
Chromium VI	mg/kg	6			6		
Lead	mg/kg	200			310		
Mercury	mg/kg	40			56		
Nickel	mg/kg	130			180		
Selenium	mg/kg	250			430		
Copper	mg/kg	2400			7100		
Zinc	mg/kg	3700			40000		
Cyanide	mg/kg	791			800		
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	120	200	380	440	690	1200
Napthalene	mg/kg	2.3	5.6	13	2.3	5.6	13
Acenaphtylene	mg/kg	170	420	920	2900	4600	6000
Acenaphthene	mg/kg	210	510	1100	3000	4700	6000
Flourene	mg/kg	170	400	860	2800	3800	4500
Phenanthrene	mg/kg	95	220	440	1300	1500	1500
Anthracene	mg/kg	2400	5400	11000	31000	35000	37000
Fluoranthene	mg/kg	280	560	890	1500	1600	1600
Pyrene	mg/kg	620	1200	2000	3700	3800	3800
Benzo(a)Anthracene	mg/kg	7.2	11	13	11	14	15
Chrysene	mg/kg	15	22	27	30	31	32
Benzo(b)Flouranthene	mg/kg	2.6	3.3	3.7	3.9	4.0	4.0
Benzo(k)Flouranthene	mg/kg	77	93	100	110	110	110
Benzo(a)Pyrene	mg/kg	2.2	2.7	3.0	3.2	3.2	3.2
Indeno(123-cd)Pyrene	mg/kg	27	36	41	45	46	46
Dibenzo(a,h)Anthracene	mg/kg	0.24	0.28	0.3	0.31	0.32	0.32
Benzo(ghi)Perylene	mg/kg	320	340	350	360	360	360
TPH C_5-C_6 Aliphatic	mg/kg	**42**	**78**	**160**	**42**	**78**	**160**
TPH C_6-C_8 Aliphatic	mg/kg	**100**	**230**	**530**	**100**	**230**	**530**
TPH C_8-C_{10} Aliphatic	mg/kg	**27**	**65**	**150**	**27**	**65**	**150**
TPH C_{10}-C_{12} Aliphatic	mg/kg	130	330	760	**130**	**330**	**770**
TPH C_{12}-C_{16} Aliphatic	mg/kg	1100	2400	4300	**1100**	2400	4400
TPH C_{16}-C_{35} Aliphatic	mg/kg	65000	92000	110000	65000	92000	110000
TPH C_{35}-C_{44} Aliphatic	mg/kg	65000	92000	110000	65000	92000	110000
TPH C_5-C_7 Aromatic	mg/kg	70	140	300	370	690	1400
TPH C_7-C_8 Aromatic	mg/kg	130	290	660	860	1800	3900
TPH C_8-C_{10} Aromatic	mg/kg	34	83	190	47	110	270
TPH C_{10}-C_{12} Aromatic	mg/kg	**74**	**180**	**380**	250	590	1200
TPH C_{12}-C_{16} Aromatic	mg/kg	**140**	**330**	**660**	1800	**2300**	**2500**
TPH C_{16}-C_{21} Aromatic	mg/kg	**260**	**540**	**930**	**1900**	**1900**	**1900**
TPH C_{21}-C_{35} Aromatic	mg/kg	**1100**	**1500**	**1700**	**1900**	**1900**	**1900**
TPH C_{35}-C_{44} Aromatic	mg/kg	**1100**	**1500**	**1700**	**1900**	**1900**	**1900**
Benzene	mg/kg	0.087	0.17	0.37	0.38	0.70	1.4
Toluene	mg/kg	130	290	660	880	1900	3900
Ethylebenzene	mg/kg	47	110	260	83	190	440
Xylene	mg/kg	56	130	310	79	180	430

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Determinant	Units	GAC Value					
		Residential POS			Commercial		
Arsenic	mg/kg	79			640		
Cadmium	mg/kg	120			190		
Chromium	mg/kg	1500			8600		
Chromium VI	mg/kg	7.7			33		
Lead	mg/kg	630			2330		
Mercury	mg/kg	120			1100		
Nickel	mg/kg	230			980		
Selenium	mg/kg	1100			12000		
Copper	mg/kg	12000			68000		
Zinc	mg/kg	81000			730000		
Cyanide	mg/kg	N/A			16200		
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	760	1500	3200	760	1500	3200
Napthalene	mg/kg	4900	4900	4900	190	460	1100
Acenaphtylene	mg/kg	15000	15000	15000	83000	97000	100000
Acenaphthene	mg/kg	15000	15000	15000	84000	97000	100000
Flourene	mg/kg	9900	9900	9900	63000	68000	71000
Phenanthrene	mg/kg	3100	3100	3100	22000	22000	23000
Anthracene	mg/kg	74000	74000	74000	520000	540000	540000
Fluoranthene	mg/kg	3100	3100	3100	23000	23000	23000
Pyrene	mg/kg	7400	7400	7400	54000	54000	54000
Benzo(a)Anthracene	mg/kg	29	29	29	170	170	180
Chrysene	mg/kg	57	57	57	350	350	350
Benzo(b)Flouranthene	mg/kg	7.1	7.2	7.2	44	44	45
Benzo(k)Flouranthene	mg/kg	190	190	190	1200	1200	1200
Benzo(a)Pyrene	mg/kg	5.7	5.7	5.7	35	35	36
Indeno(123-cd)Pyrene	mg/kg	82	82	82	500	510	510
Dibenzo(a,h)Anthracene	mg/kg	0.57	0.57	0.58	3.5	3.6	3.6
Benzo(ghi)Perylene	mg/kg	640	640	640	3900	4000	4000
TPH C_5-C_6 Aliphatic	mg/kg	570000	590000	600000	**3200**	**5900**	**12000**
TPH C_6-C_8 Aliphatic	mg/kg	600000	610000	620000	**7800**	**17000**	**40000**
TPH C_8-C_{10} Aliphatic	mg/kg	13000	13000	13000	**2000**	**4800**	**11000**
TPH C_{10}-C_{12} Aliphatic	mg/kg	13000	13000	13000	**9700**	**23000**	47000
TPH C_{12}-C_{16} Aliphatic	mg/kg	13000	13000	13000	59000	82000	90000
TPH C_{16}-C_{35} Aliphatic	mg/kg	250000	250000	250000	1600000	1700000	1800000
TPH C_{35}-C_{44} Aliphatic	mg/kg	250000	250000	250000	1600000	1700000	1800000
TPH C_5-C_7 Aromatic	mg/kg	**56000**	**56000**	**56000**	26000	46000	86000
TPH C_7-C_8 Aromatic	mg/kg	**56000**	**56000**	**56000**	56000	110000	180000
TPH C_8-C_{10} Aromatic	mg/kg	**5000**	**5000**	**5000**	3500	8100	17000
TPH C_{10}-C_{12} Aromatic	mg/kg	**5000**	**5000**	**5000**	16000	28000	**34000**
TPH C_{12}-C_{16} Aromatic	mg/kg	**5100**	**5100**	**5000**	**36000**	**37000**	**38000**
TPH C_{16}-C_{21} Aromatic	mg/kg	**3800**	**3800**	**3800**	**28000**	**28000**	**28000**
TPH C_{21}-C_{35} Aromatic	mg/kg	**3800**	**3800**	**3800**	**28000**	**28000**	**28000**
TPH C_{35}-C_{44} Aromatic	mg/kg	**3800**	**3800**	**3800**	**28000**	**28000**	**28000**
Benzene	mg/kg	72	72	73	27	47	90
Toluene	mg/kg	56000	56000	56000	56000	110000	180000
Ethylebenzene	mg/kg	24000	24000	25000	5700	13000	27000
Xylene	mg/kg	41000	42000	43000	5900	14000	30000

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Determinant	Units	GAC Value					
		Park POS			Allotments		
Arsenic	mg/kg	170			43		
Cadmium	mg/kg	532			1.9		
Chromium	mg/kg	33000			18000		
Chromium VI	mg/kg	220			1.8		
Lead	mg/kg	1300			80		
Mercury	mg/kg	240			19		
Nickel	mg/kg	800			53		
Selenium	mg/kg	1800			88		
Copper	mg/kg	44000			520		
Zinc	mg/kg	170000			620		
Cyanide	mg/kg						
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	760	1500	3200	66	140	280
Napthalene	mg/kg	1200	1900	3000	4.1	10	24
Acenaphtylene	mg/kg	29000	30000	30000	28	69	160
Acenaphthene	mg/kg	29000	30000	30000	34	85	200
Flourene	mg/kg	20000	20000	20000	27	67	160
Phenanthrene	mg/kg	6200	6200	6300	15	38	90
Anthracene	mg/kg	150000	150000	150000	380	950	2200
Fluoranthene	mg/kg	6300	6300	6400	52	130	290
Pyrene	mg/kg	15000	15000	15000	110	270	620
Benzo(a)Anthracene	mg/kg	49	56	62	2.9	6.5	13
Chrysene	mg/kg	93	110	120	4.1	9.4	19
Benzo(b)Flouranthene	mg/kg	13	15	16	0.99	2.1	3.9
Benzo(k)Flouranthene	mg/kg	370	410	440	37	75	130
Benzo(a)Pyrene	mg/kg	11	12	13	0.97	2.0	3.5
Indeno(123-cd)Pyrene	mg/kg	150	170	180	9.5	21	39
Dibenzo(a,h)Anthracene	mg/kg	1.1	1.3	1.4	0.14	0.27	0.43
Benzo(ghi)Perylene	mg/kg	1400	1500	1600	290	470	640
TPH C_5-C_6 Aliphatic	mg/kg	95000	130000	180000	730	1700	3900
TPH C_6-C_8 Aliphatic	mg/kg	150000	220000	320000	2300	5600	13000
TPH C_8-C_{10} Aliphatic	mg/kg	14000	18000	21000	320	770	1700
TPH C_{10}-C_{12} Aliphatic	mg/kg	21000	23000	24000	2200	4400	7300
TPH C_{12}-C_{16} Aliphatic	mg/kg	25000	25000	26000	11000	13000	13000
TPH C_{16}-C_{35} Aliphatic	mg/kg	450000	480000	490000	260000	270000	270000
TPH C_{35}-C_{44} Aliphatic	mg/kg	450000	480000	490000	260000	270000	270000
TPH C_5-C_7 Aromatic	mg/kg	**76000**	**84000**	**92000**	**13**	**27**	**57**
TPH C_7-C_8 Aromatic	mg/kg	**87000**	**95000**	**100000**	**22**	**51**	**120**
TPH C_8-C_{10} Aromatic	mg/kg	**7200**	**8500**	**9300**	**8.6**	**21**	**51**
TPH C_{10}-C_{12} Aromatic	mg/kg	**9200**	**9700**	**10000**	**13**	**31**	**74**
TPH C_{12}-C_{16} Aromatic	mg/kg	**10000**	**10000**	**10000**	**23**	**57**	**130**
TPH C_{16}-C_{21} Aromatic	mg/kg	**7600**	**7700**	**7800**	**46**	**110**	**260**
TPH C_{21}-C_{35} Aromatic	mg/kg	**7800**	**7800**	**7900**	**370**	**820**	**1600**
TPH C_{35}-C_{44} Aromatic	mg/kg	**7800**	**7800**	**7900**	**370**	**820**	**1600**
Benzene	mg/kg	90	100	110	0.017	0.034	0.075
Toluene	mg/kg	87000	95000	100000	22	51	120
Ethylebenzene	mg/kg	17000	22000	27000	16	39	91
Xylene	mg/kg	17000	23000	31000	28	67	160

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Controlled Waters Assessment Reference Values

Determinant	Unit	EQS Freshwater						Uk DWS	WHO
Hardness	mg/l	0-50	50-100	100-150	150-200	200-250	>250		
Arsenic	ug/l	50						10	10
Boron	ug/l	2000						1000	0.3
Cadmium	ug/l	5						5	3
Chromium	ug/l	2	10	10	20	20	20	50	50
Lead	ug/l	4	10	10	20	20	20	10	10
Mercury	ug/l	1						1	1
Selenium	ug/l							10	10
Copper	ug/l	0.5	3	3	3	8	12	20000	2000
Nickel	ug/l	8	20	20	40	40	40	20	70
Zinc	ug/l	8	15	15	50	50	50	5000	3000
Sulphate	mg/l	400						250	250
PAH	ug/l							0.1	
Anthracene	ug/l	0.02							
Napthalene	ug/l	10							
Benzo(a)Pyrene	ug/l	0.03							0.01
Fluoranthene	ug/l	0.02							
Benzene	ug/l	30						1	10
Toluene	ug/l	50							
Ethylebenzene	ug/l	20							
Xylene	ug/l	30							
$C_5 – C_6$ Aliphatic	ug/l								15000
$C_6 – C_8$ Aliphatic	ug/l								15000
$C_8 – C_{10}$ Aliphatic	ug/l								300
$C_{10} – C_{12}$ Aliphatic	ug/l								300
$C_{12} – C_{16}$ Aliphatic	ug/l								300
$C_{16} – C_{36}$ Aliphatic	ug/l								N/A
$C_6 – C_7$ Aromatic	ug/l								10
$C_7 – C_8$ Aromatic	ug/l	50							10
$C_8 – C_{10}$ Aromatic	ug/l	20							300
$C_{10} – C_{12}$ Aromatic	ug/l								1000
$C_{12} – C_{16}$ Aromatic	ug/l								1000
$C_{16} – C_{21}$ Aromatic	ug/l								90
$C_{21} – C_{35}$ Aromatic	ug/l								90

TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

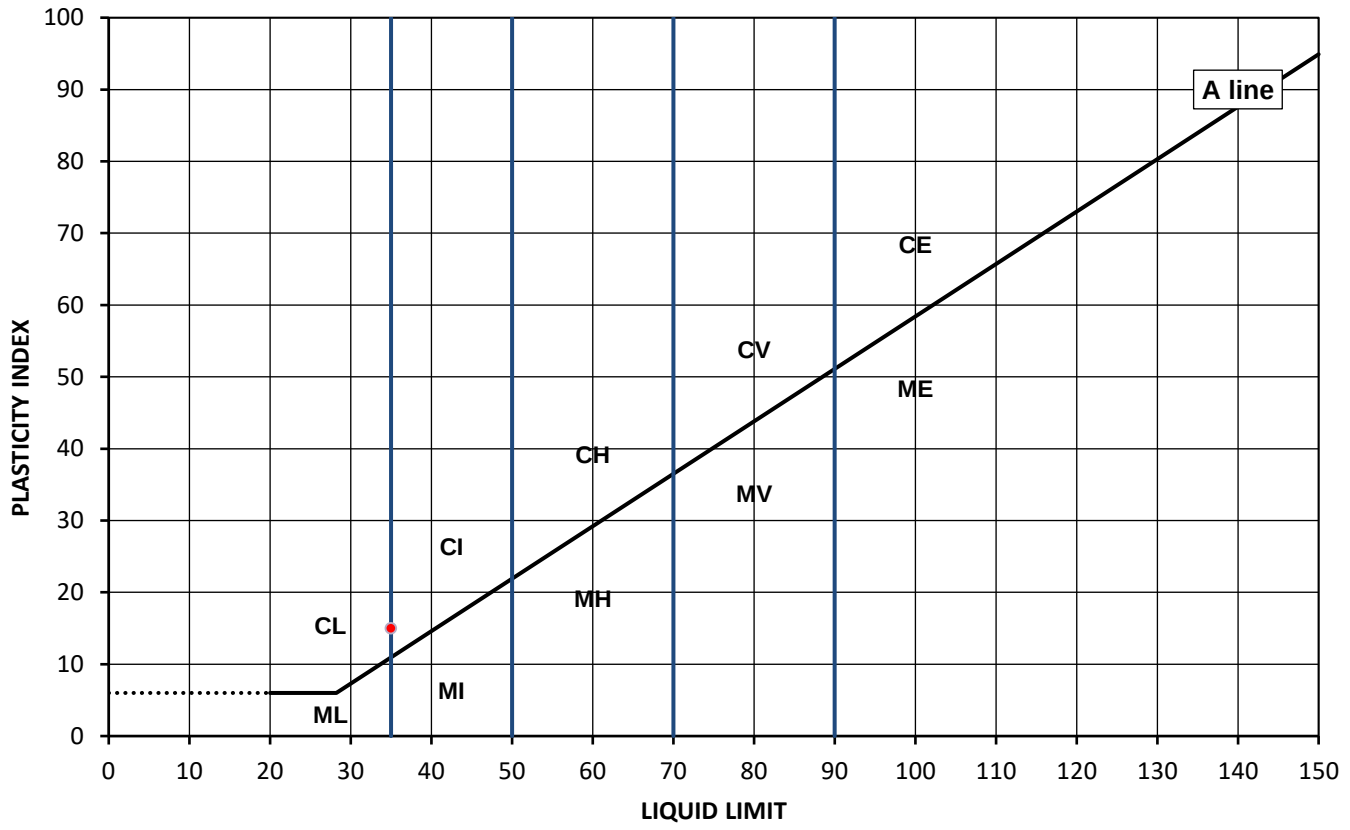
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1122.003
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	20-20274
		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	28/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567055	Depth Top [m]:	0.00
Hole No.:	TP4	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
13	35	20	15	90



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:

Aleksandra Jurochnik
PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

Date Reported: 31/07/2020

GF 232.9

TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

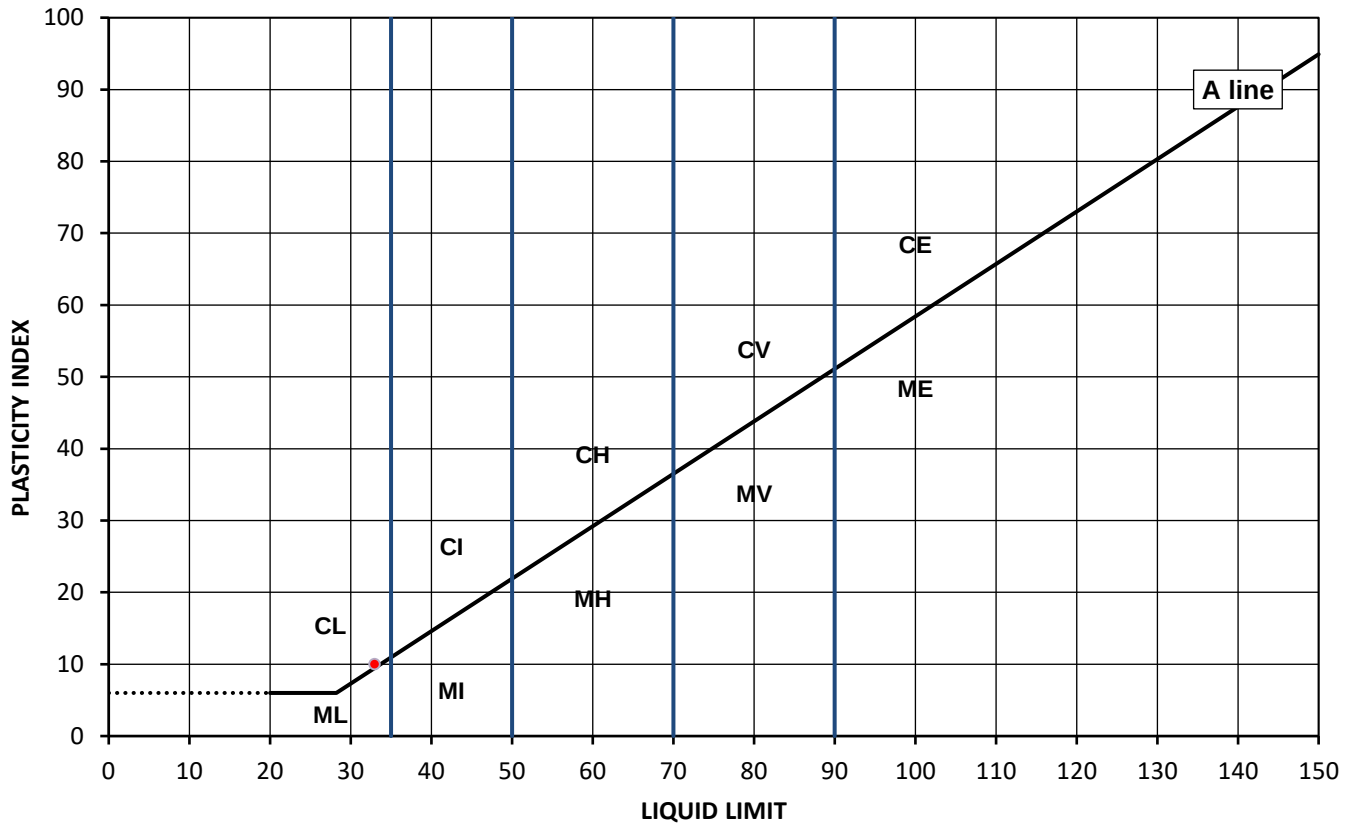
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1122.003
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	20-20274
		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567056	Depth Top [m]:	0.80
Hole No.:	WS2	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
13	33	23	10	51



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

Date Reported: 31/07/2020

GF 232.9

TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

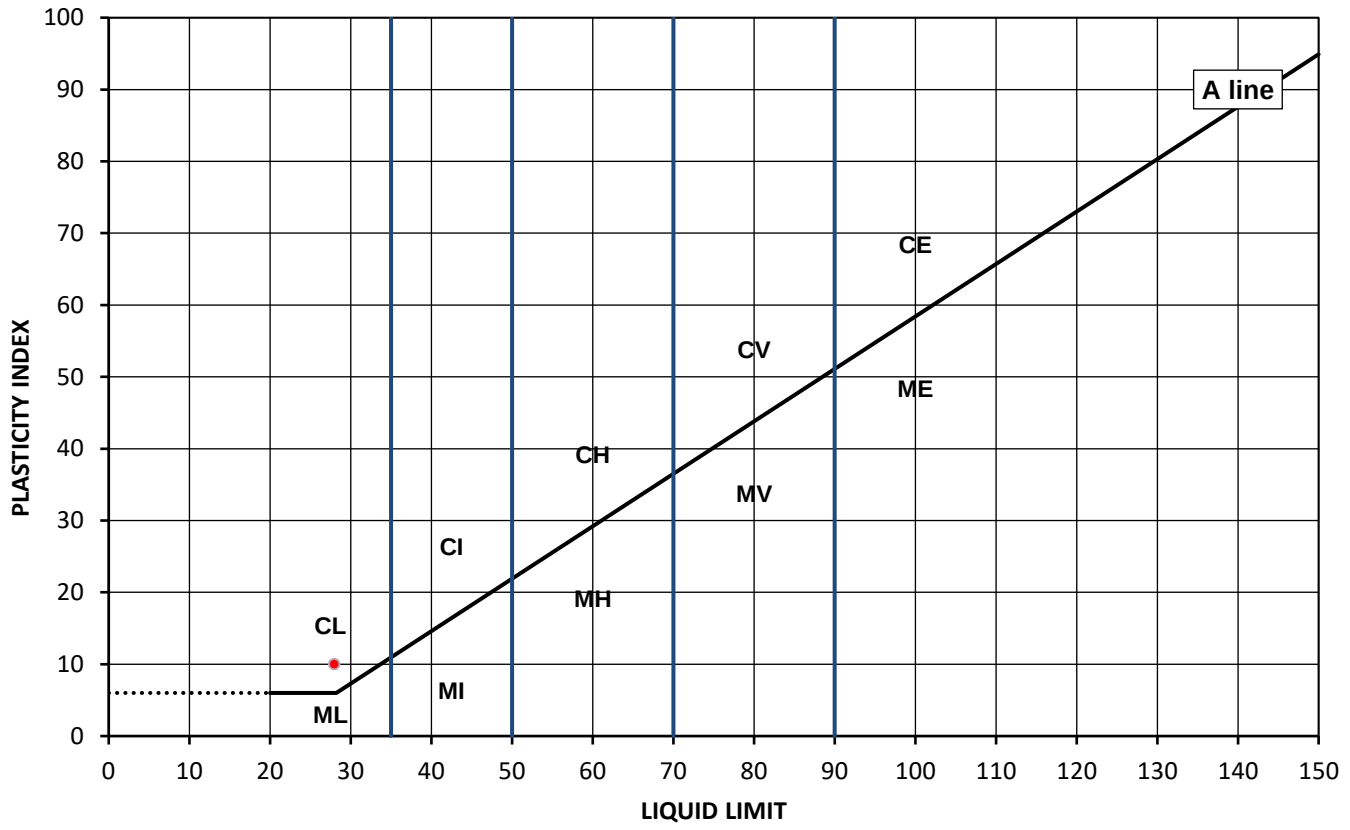
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Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	20-20274
		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567057	Depth Top [m]:	1.50
Hole No.:	WS2	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brown slightly gravelly very sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
16	28	18	10	88



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

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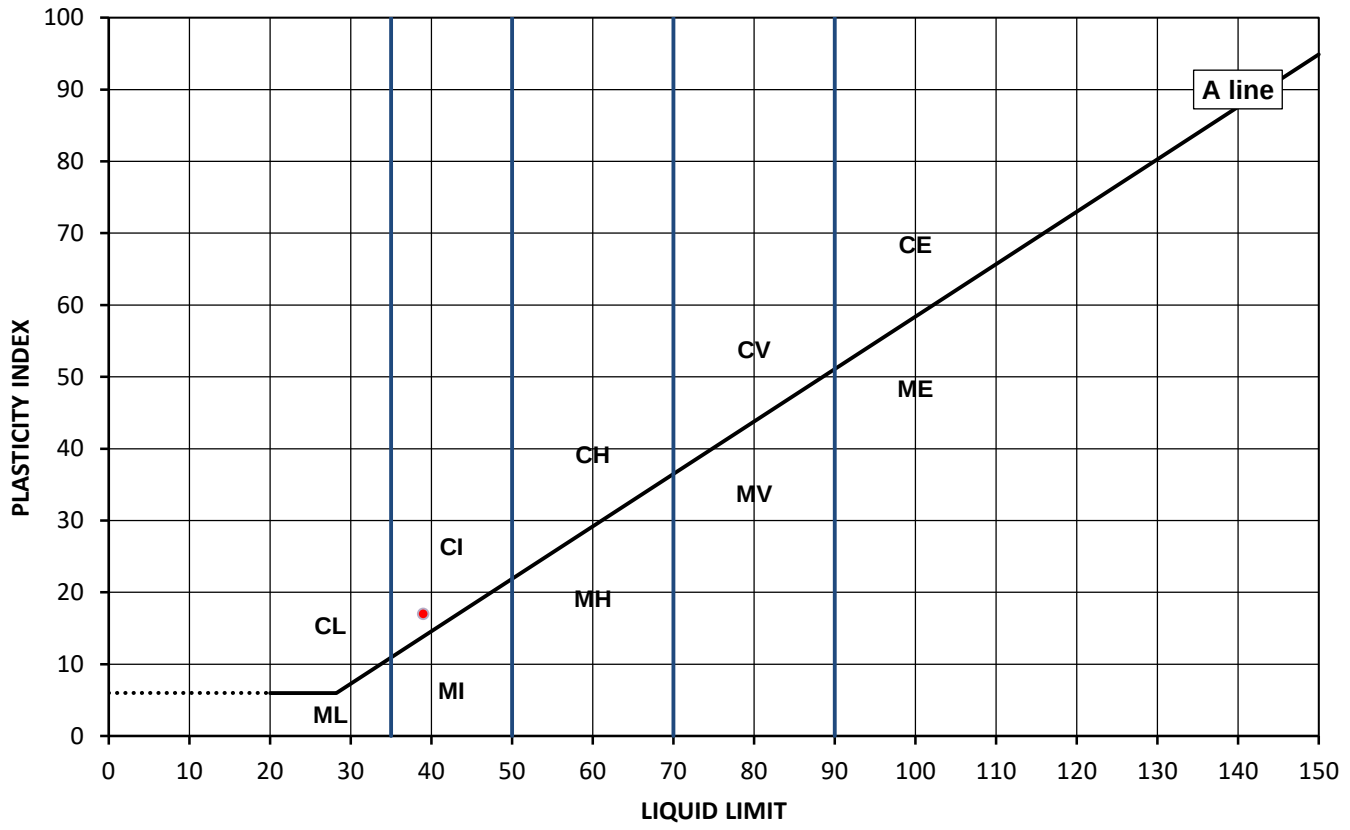
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Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	20-20274
		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567058	Depth Top [m]:	1.00
Hole No.:	WS3	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brown sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
20	39	22	17	100



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

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		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

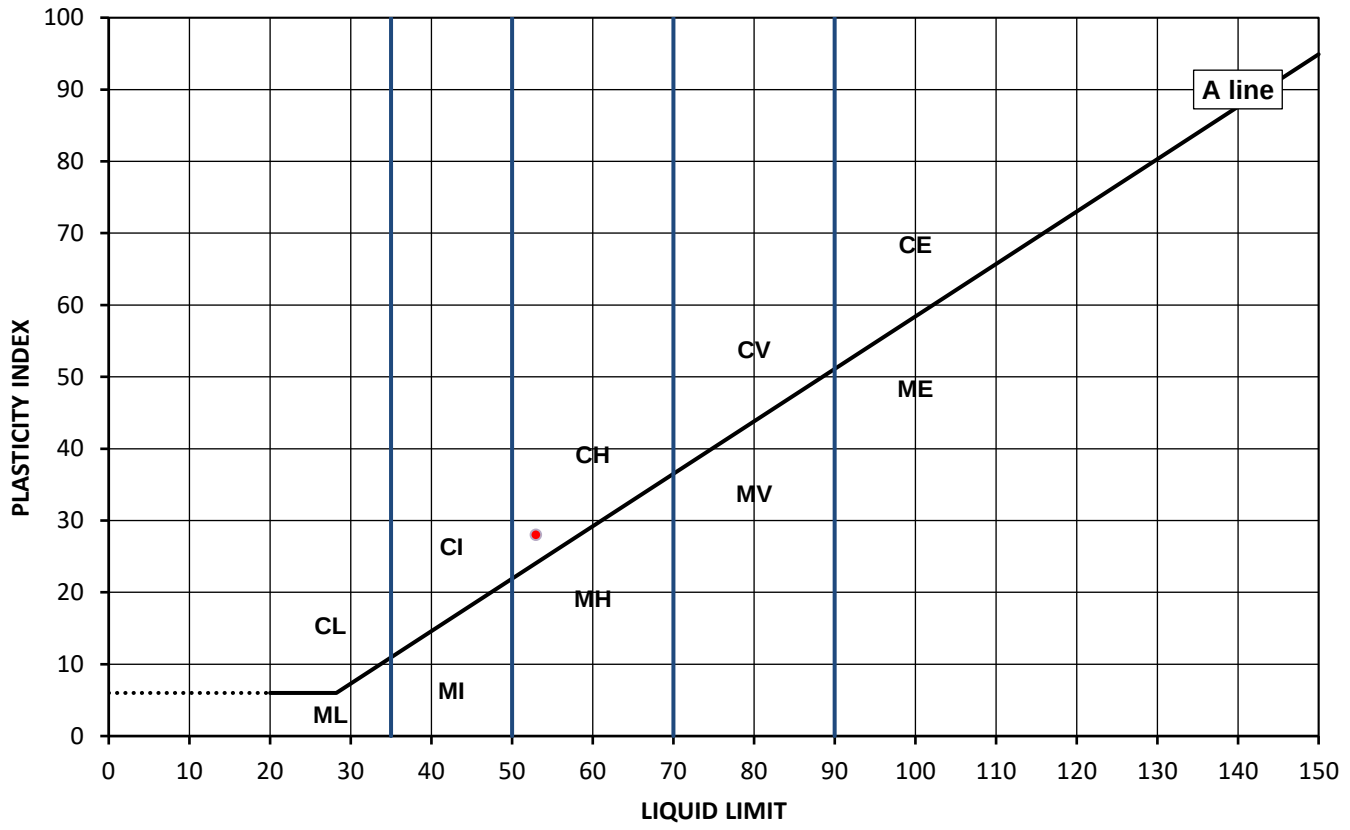
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567059	Depth Top [m]:	1.00
Hole No.:	WS4	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brown CLAY		

Sample Preparation: Tested in natural condition

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
20	53	25	28	100



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

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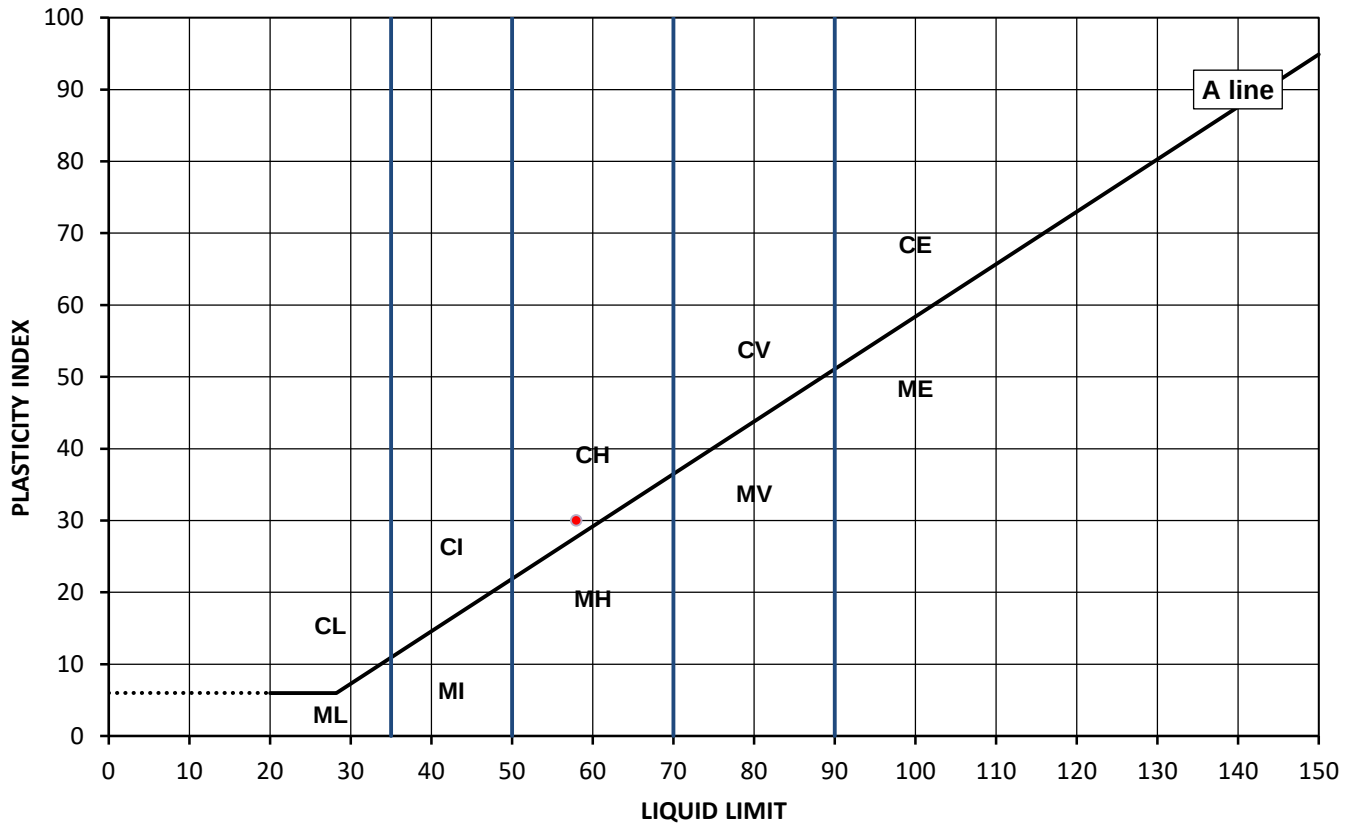
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Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	20-20274
		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567060	Depth Top [m]:	2.00
Hole No.:	WS4	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brownish grey slightly gravelly CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
19	58	28	30	85



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

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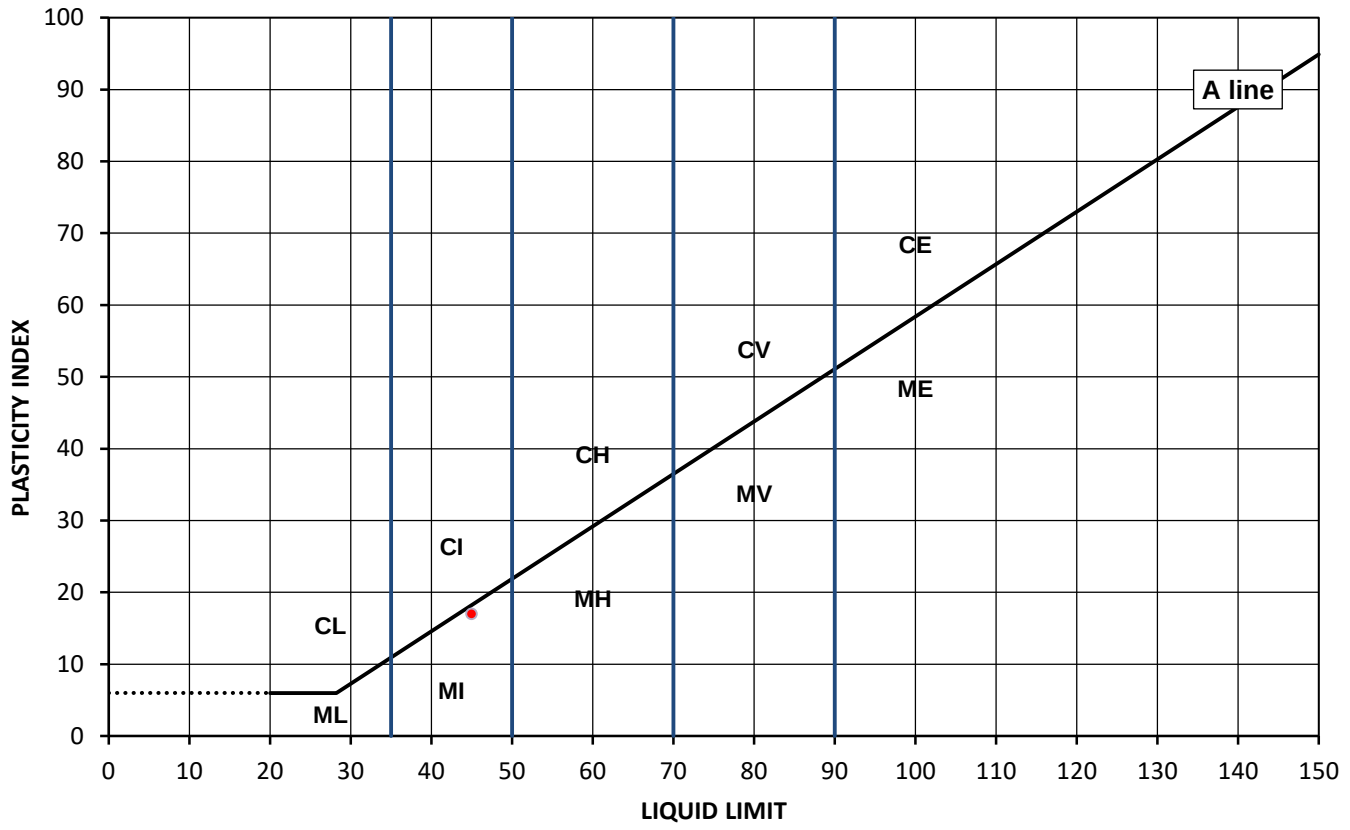
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Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	20-20274
		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567061	Depth Top [m]:	1.00
Hole No.:	WS5	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brown gravelly slightly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
18	45	28	17	54



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

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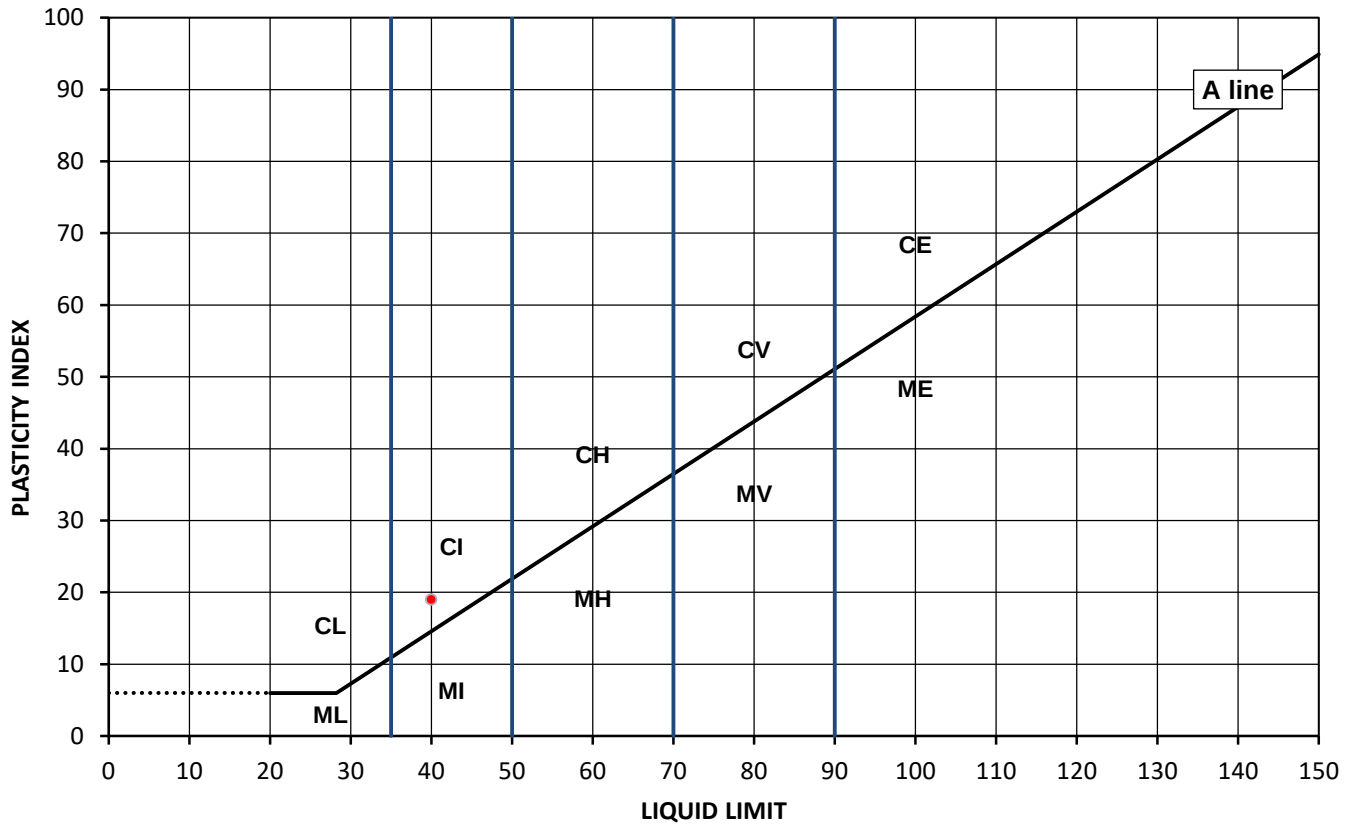
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Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	20-20274
		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567062	Depth Top [m]:	2.00
Hole No.:	WS5	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Greyish brown sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
9.9	40	21	19	100



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

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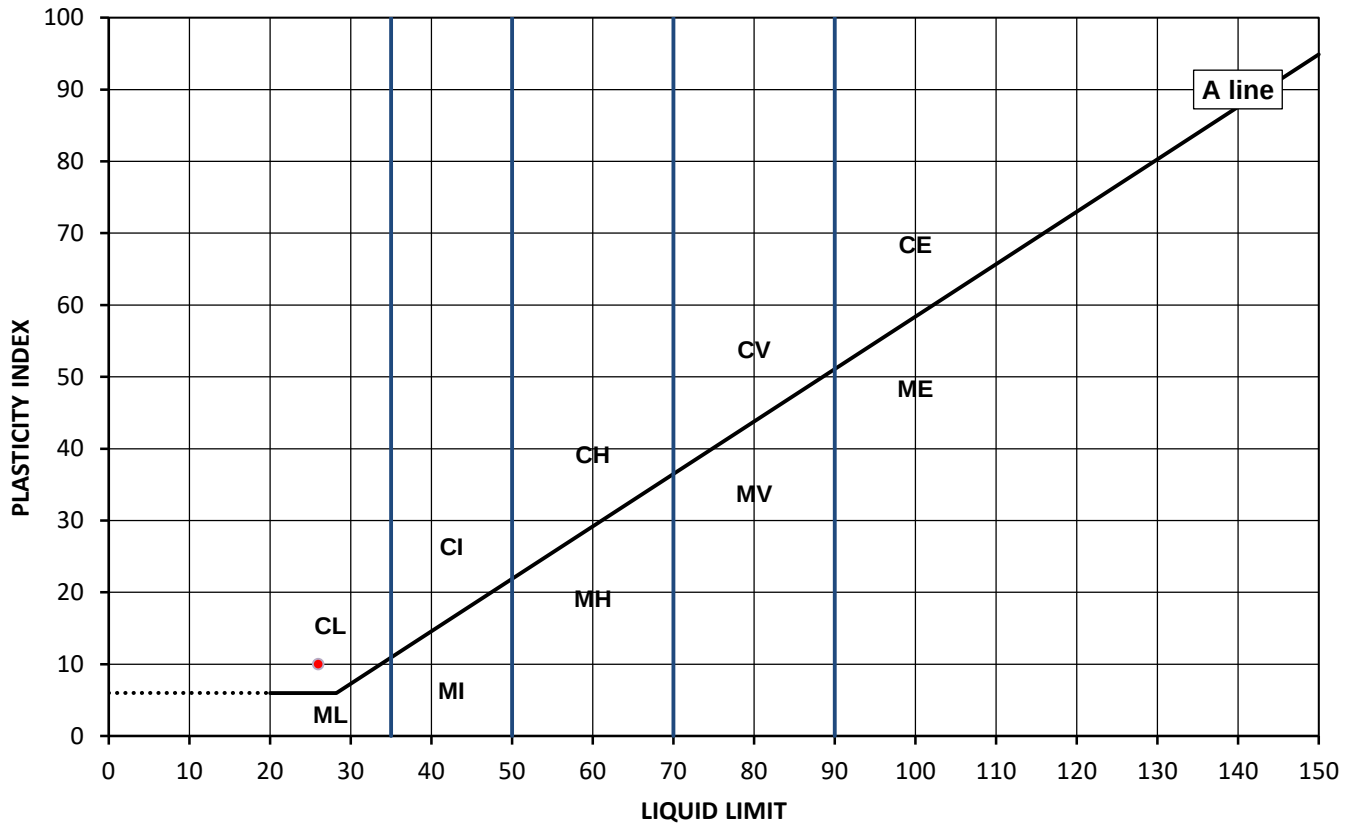
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		Date Sampled:	13/07/2020
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Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567063	Depth Top [m]:	1.00
Hole No.:	WS6	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brownish grey very sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
13	26	16	10	100



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

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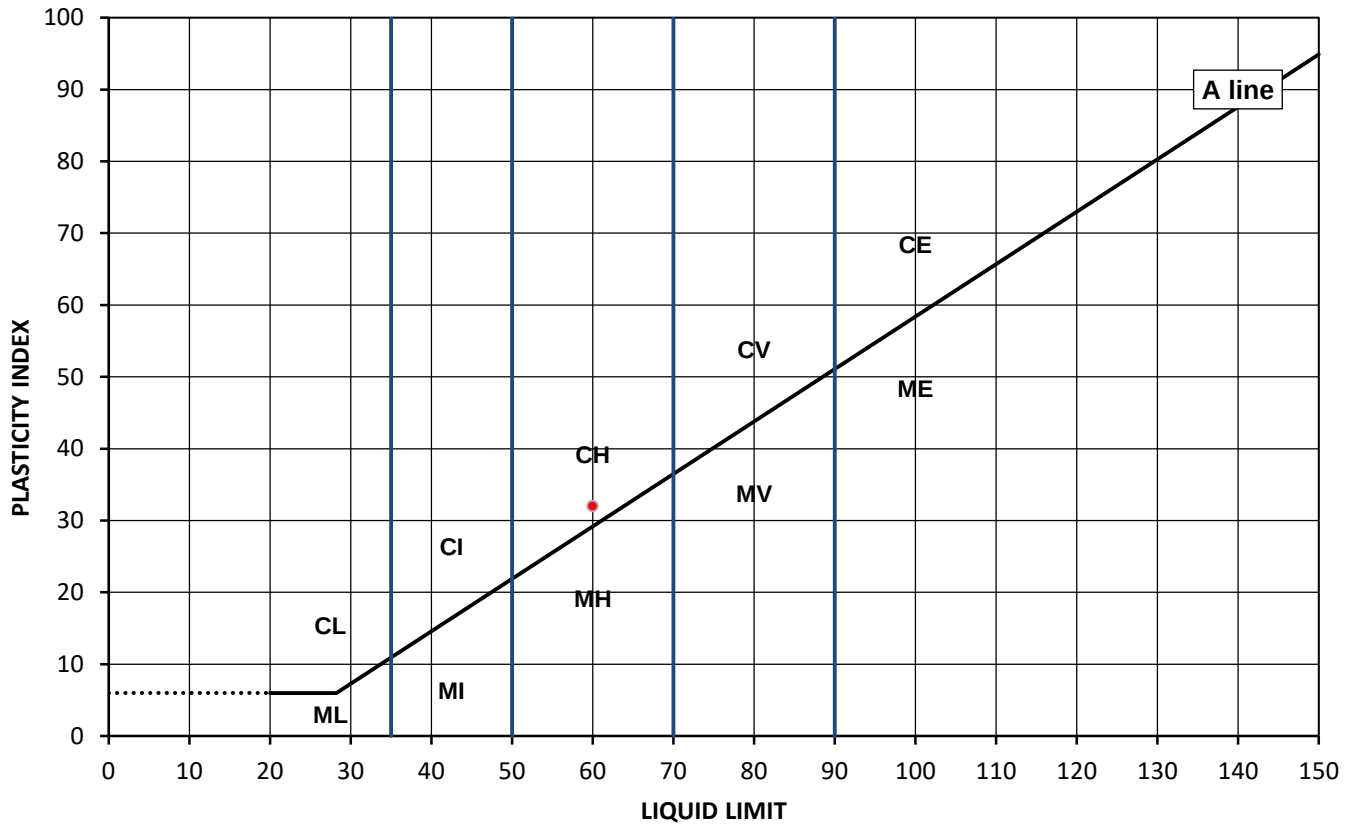
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Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567064	Depth Top [m]:	1.60
Hole No.:	WS7	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brownish grey slightly gravelly CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
19	60	28	32	83



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

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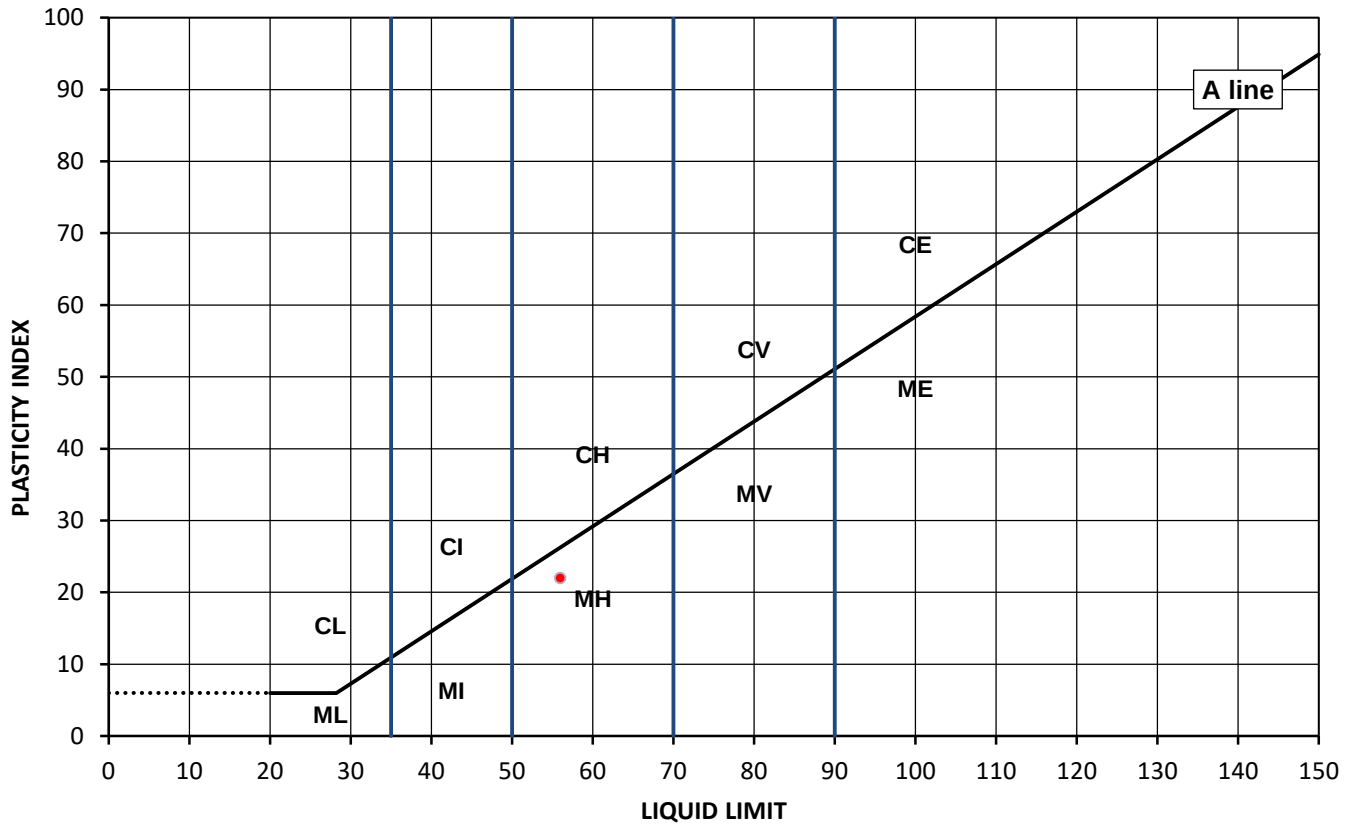
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567065	Depth Top [m]:	2.00
Hole No.:	WS7	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Black COAL		

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
24	56	34	22	92



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

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

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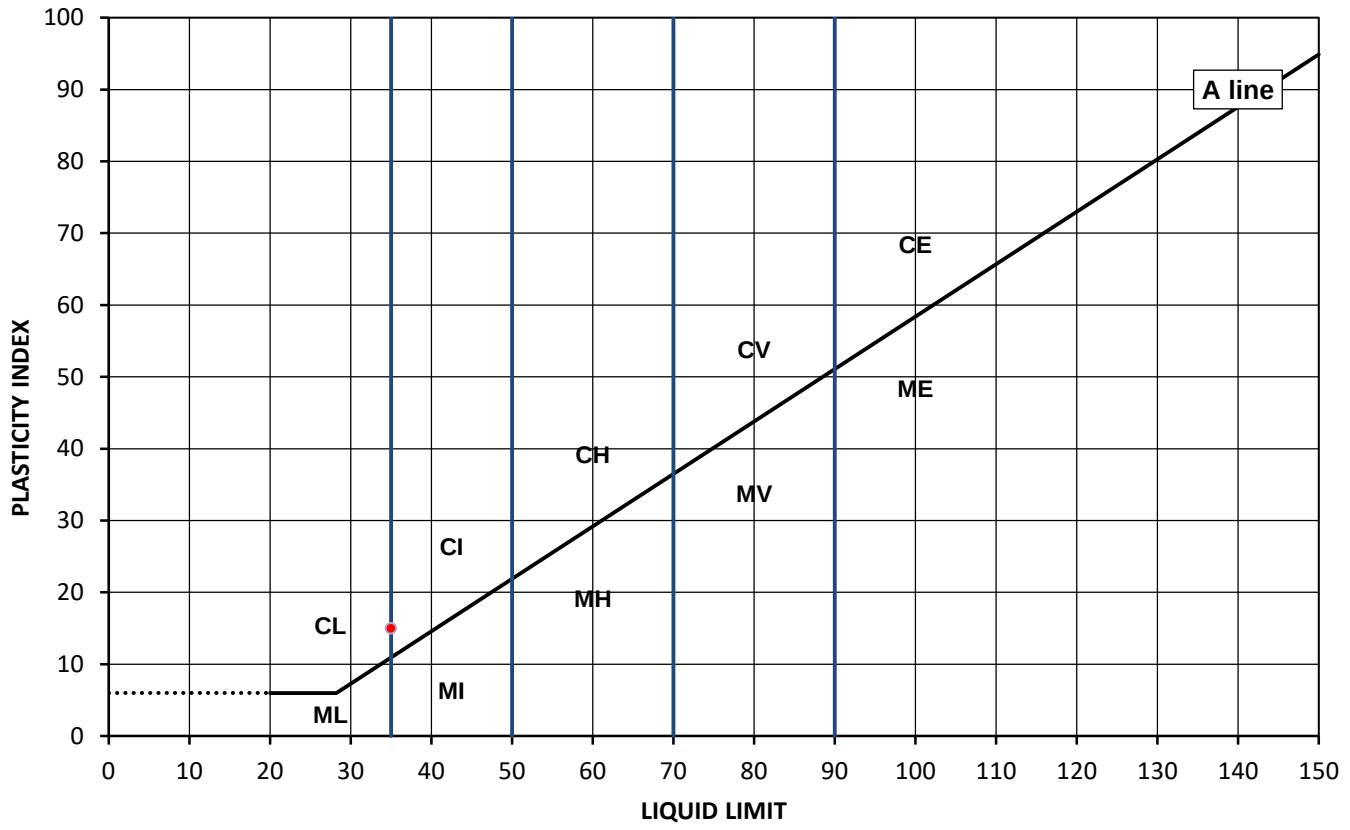
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Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567067	Depth Top [m]:	2.00
Hole No.:	WS8	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Greyish brown sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
11	35	20	15	100



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

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

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Northampton NN4 7EB

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

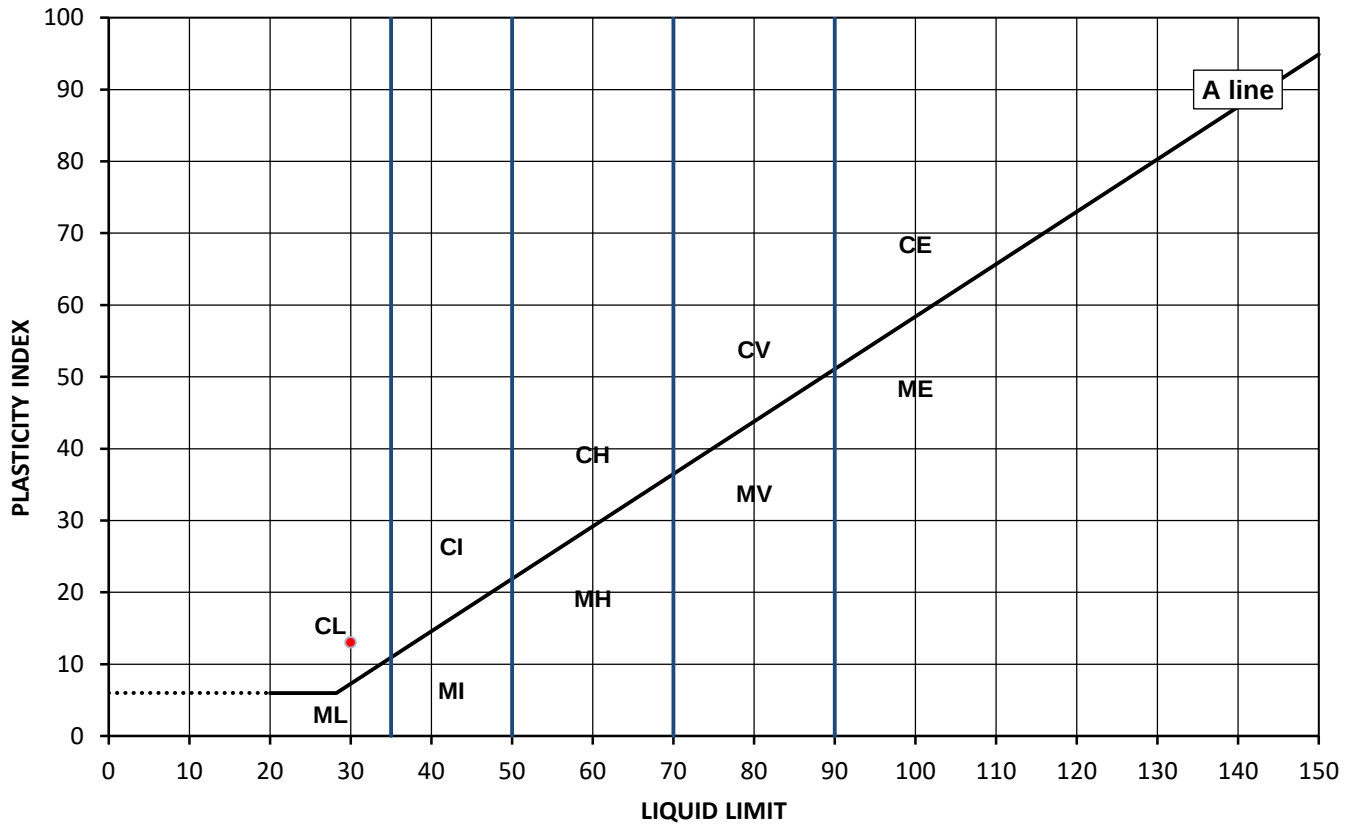
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1122.003
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	20-20274
		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567068	Depth Top [m]:	1.00
Hole No.:	WS9	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Yellowish brown very sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
11	30	17	13	100



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:

Aleksandra Jurochnik
PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

Date Reported: 31/07/2020

GF 232.9

TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

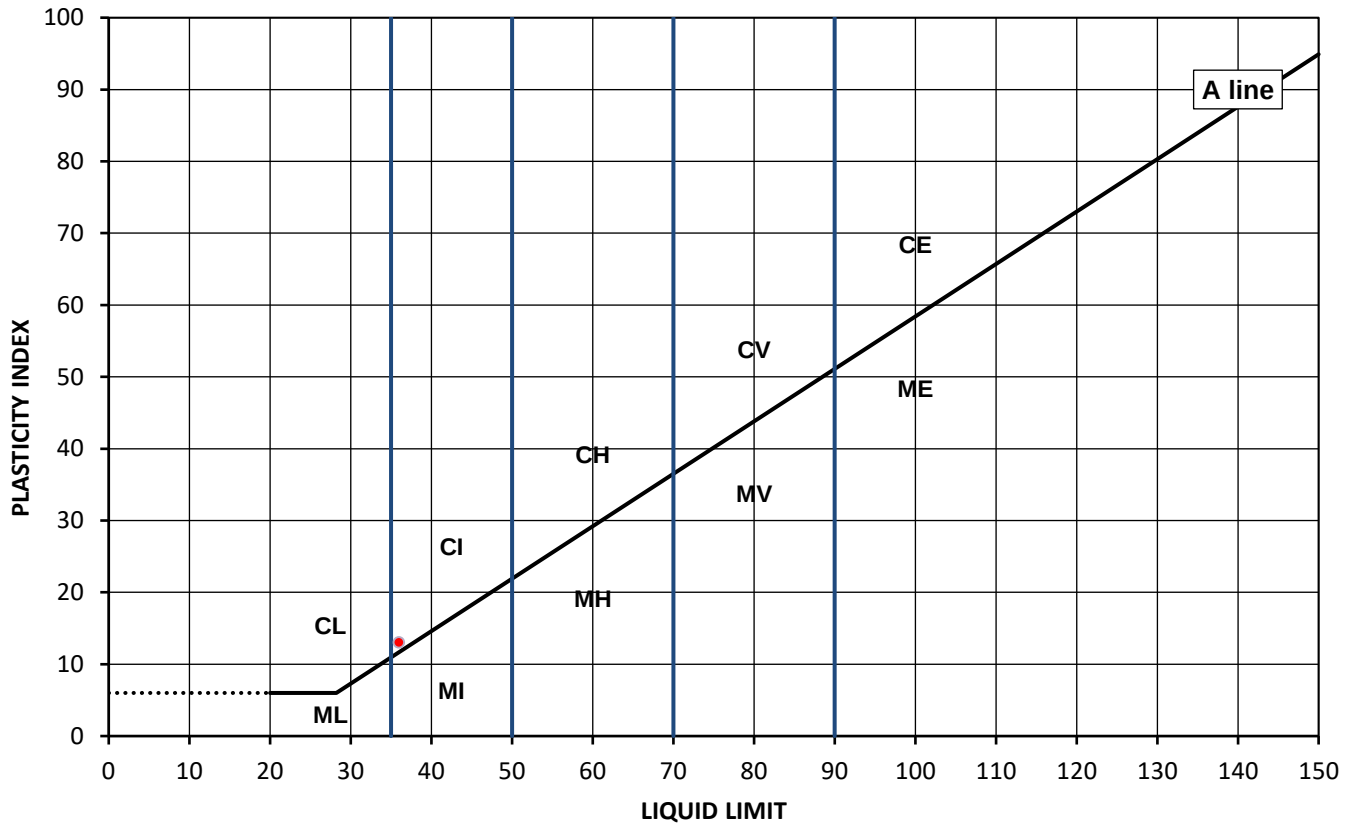
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1122.003
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	20-20274
		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	29/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1567069	Depth Top [m]:	1.60
Hole No.:	WS10	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Yellowish brown gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
14	36	23	13	45



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

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

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed:

Aleksandra Jurochnik
PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

Date Reported: 31/07/2020

GF 232.9

SUMMARY REPORT

Summary of Classification Test Results

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Tested in Accordance with:

MC by BS 1377-2: 1990: Clause 3.2; WC by BS EN 17892-1: 2014; Atterberg by BS 1377-2: 1990: Clause 4.3, Clause 4.4 and 5; PD by BS 1377-2: 1990: Clause 8.2

Client: Enzygo Geoenvironmental Ltd

Client Address: The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA

Contact: Steve Rhodes

Site Address: Pitt Street

Client Reference: CRM.1122.003
Job Number: 20-20274
Date Sampled: 13/07/2020
Date Received: 15/07/2020
Date Tested: 28/07 - 29/07/2020
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC	WC	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	LL	PL	PI	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
1567055	TP4	Not Given	0.00	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	13		90	35	20	15						
1567069	WS10	Not Given	1.60	Not Given	D	Yellowish brown gravelly sandy CLAY	Atterberg 1 Point	14		45	36	23	13						
1567056	WS2	Not Given	0.80	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	13		51	33	23	10						
1567057	WS2	Not Given	1.50	Not Given	D	Brown slightly gravelly very sandy CLAY	Atterberg 1 Point	16		88	28	18	10						
1567058	WS3	Not Given	1.00	Not Given	D	Brown sandy CLAY	Atterberg 1 Point	20		100	39	22	17						
1567059	WS4	Not Given	1.00	Not Given	D	Brown CLAY	Atterberg 1 Point	20		100	53	25	28						
1567060	WS4	Not Given	2.00	Not Given	D	Brownish grey slightly gravelly CLAY	Atterberg 1 Point	19		85	58	28	30						
1567061	WS5	Not Given	1.00	Not Given	D	Brown gravelly slightly sandy CLAY	Atterberg 1 Point	18		54	45	28	17						
1567062	WS5	Not Given	2.00	Not Given	D	Greyish brown sandy CLAY	Atterberg 1 Point	9.9		100	40	21	19						
1567063	WS6	Not Given	1.00	Not Given	D	Brownish grey very sandy CLAY	Atterberg 1 Point	13		100	26	16	10						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Aleksandra Jurochnik
PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

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Date Reported: 31/07/2020

GF 234.11

SUMMARY REPORT

Summary of Classification Test Results

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Tested in Accordance with:

MC by BS 1377-2: 1990: Clause 3.2; WC by BS EN 17892-1: 2014; Atterberg by BS 1377-2: 1990: Clause 4.3, Clause 4.4 and 5; PD by BS 1377-2: 1990: Clause 8.2

Client: Enzygo Geoenvironmental Ltd

Client Address: The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA

Contact: Steve Rhodes

Site Address: Pitt Street

Client Reference: CRM.1122.003
Job Number: 20-20274
Date Sampled: 13/07/2020
Date Received: 15/07/2020
Date Tested: 29/07/2020
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC	WC	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	LL	PL	PI	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
1567064	WS7	Not Given	1.60	Not Given	D	Brownish grey slightly gravelly CLAY	Atterberg 1 Point	19		83	60	28	32						
1567065	WS7	Not Given	2.00	Not Given	D	Black COAL	Atterberg 1 Point	24		92	56	34	22						
1567066	WS8	Not Given	1.00	Not Given	D	Brownish grey slightly gravelly sandy CLAY		8.8											
1567067	WS8	Not Given	2.00	Not Given	D	Greyish brown sandy CLAY	Atterberg 1 Point	11		100	35	20	15						
1567068	WS9	Not Given	1.00	Not Given	D	Yellowish brown very sandy CLAY	Atterberg 1 Point	11		100	30	17	13						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Aleksandra Jurochnik
PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

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Date Reported: 31/07/2020

GF 234.11

TEST CERTIFICATE

California Bearing Ratio Top Only

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1122.003
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	20-20274
		Date Sampled:	13/07/2020
		Date Received:	15/07/2020
Contact:	Steve Rhodes	Date Tested:	28/07/2020
Site Address:	Pitt Street	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

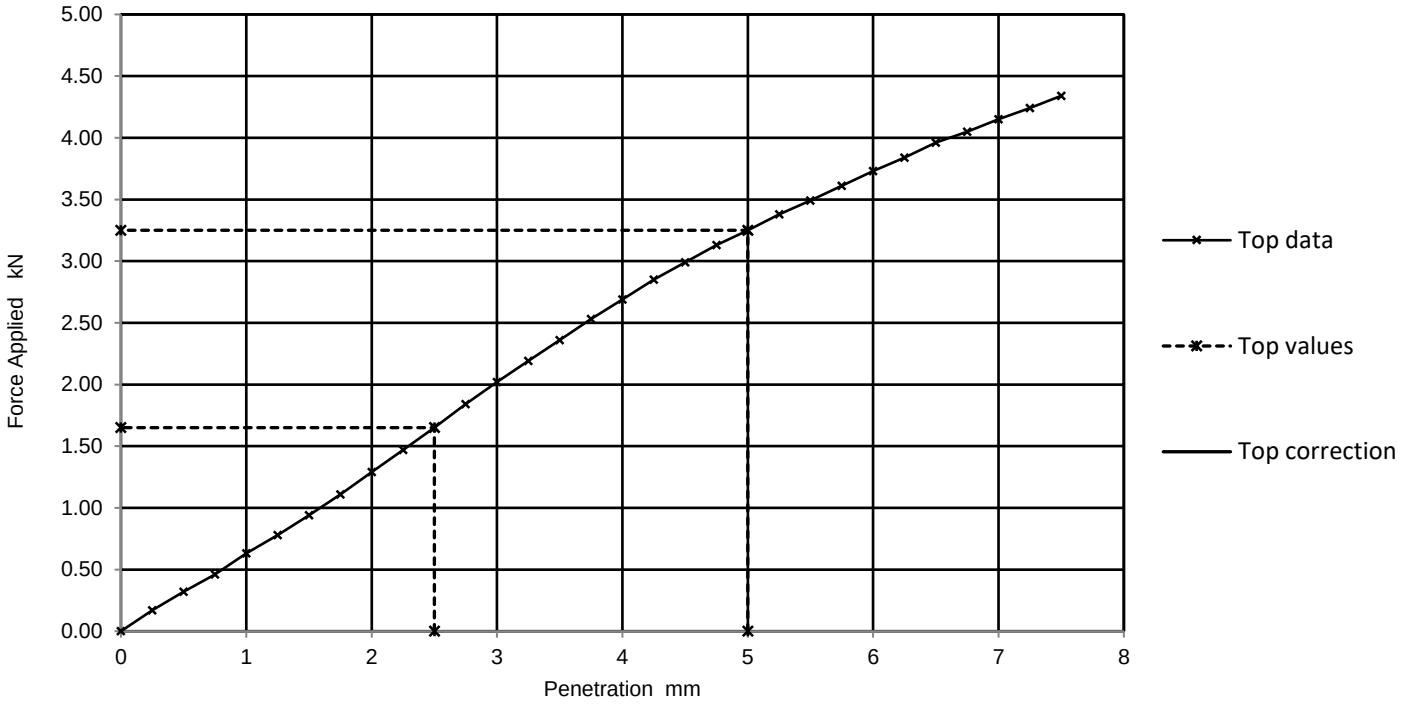
Laboratory Reference:	1567055	Depth Top [m]:	0.00
Hole No.:	TP4	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	0 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.03	Mg/m3	Surcharge applied	8 kg
	Dry density	1.75	Mg/m3		4.8 kPa
	Moisture content	16	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	13.0	16.0	16.0	N/A	14

Remarks:

Test/ Specimen specific remarks:

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Signed:

Aleksandra Jurochnik
PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

Date Reported: 31/07/2020

GF 277.8

Steve Rhodes
Enzygo Geoenvironmental Ltd
The Byre
Woodend Lane
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GL12 8AA

e: steve.rhodes@enzygo.com

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7 Woodshots Meadow,
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WD18 8YS

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 20-20281

Project / Site name:	Pitt Street	**Samples received on:**	15/07/2020
Your job number:	CRM.1122.003	**Sample instructed/ Analysis started on:**	20/07/2020
Your order number:		**Analysis completed by:**	30/07/2020
Report Issue Number:	1	**Report issued on:**	30/07/2020
Samples Analysed:	4 soil samples		

Signed: A. Czerwińska

Agnieszka Czerwińska

Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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.

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Analytical Report Number: 20-20281

Project / Site name: Pitt Street

Lab Sample Number				1567101	1567102	1567103	1567104	
Sample Reference				TP4	WS4	WS4	WS4	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	1.00	2.00	3.00	
Date Sampled				13/07/2020	13/07/2020	13/07/2020	13/07/2020	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	10	18	12	16	
Total mass of sample received	kg	0.001	NONE	0.40	0.40	0.40	0.40	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.1	5.5	7.6	5.6	
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	32	420	280	210	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.016	0.21	0.14	0.11	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	16.0	208	138	105	

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Analytical Report Number : 20-20281

Project / Site name: Pitt Street

* 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 *
1567101	TP4	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
1567102	WS4	None Supplied	1.00	Brown clay.
1567103	WS4	None Supplied	2.00	Brown clay.
1567104	WS4	None Supplied	3.00	Black sandy loam with coal and gravel

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Analytical Report Number : 20-20281

Project / Site name: Pitt Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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Enzygo specialise in a wide range of technical services:

Property and Sites
Waste and Mineral Planning
Waste Technologies and Renewables
Landscape and Visual Impact
Environmental Assessment Co-ordination
Hydrology and Flood Risk
Waste Contract Procurement
Noise and Vibration
Environmental Permitting and Regulation
Development Planning & Policy
Ecology Services
Contaminated Land and Geotechnical
Traffic and Transportation
Planning Services

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5 Fox Valley Way,
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Please visit our website for more information.

enzygo.com