Garth Wymott 2

Ground Investigation Report

For Ministry of Justice

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Client	Ministry of Justice
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Proposed development	The proposed new prison is comprised of a number of blocks which will generally be of three to four storey reinforced concrete construction including a workshop, house blocks, kitchen building, central service hubs, entrance resource hub and support building, as well as several lightweight sub stations. It is proposed to relocate the pumping station in the north east of the site. As part of the proposed development a car park will be constructed in the south east of the site with a proposed SUDs Pond.
GROUND MODEL	
Desk study summary	The majority of site is currently tenanted farmland, with one other section being the former sports fields and pavilion within the north east part of the site of HMP Wymott. Historical mapping suggests that the site was predominantly agricultural land with a number of small ponds until the 1940's when two sets of rail tracks transect the north of the site and terminate adjacent to the north west boundary where it's understood a former ministry of defence explosive storage house. Historical mapping from the 1980s onward no longer records the explosive storage house. Between 1983 and 1984 HM Prison is recorded in the centre and south. It is not clear when the buildings in the north were appropriated for their current agricultural use. A building corresponding to the location of the current boiler house appears on mapping between 1900-1995. Buildings corresponding to the location of the current stables appear on mapping in 2006. A sewage pumping station is indicated in the east of the site on 2020 mapping, though the structure appears to have been present on mapping since the 1980's. The previous desk study indicates a low risk and no further assessment is required with regard to UXO in relation to ground investigation. However, the E3P report states that the recommendations of the Brimstone UXO Study is the completion of a Stage 2 Detailed Risk Assessment for the proposed development works. The superficial geology comprises Glacial Till in the east and far west of the site, with Head deposits shown to be present in the central and northern areas on the BGS mapping. The solid geology comprises the Singleton Mudstone Member, which is part of the Sidmouth Mudstone Formation (itself part of the Mercia Mudstone Formation). The Glacial Till and Head deposits are classed by the Environment Agency as a Secondary Undifferentiated Aquifer and Secondary A Aquifer respectively. The Singleton Mudstone Member is classified as a Secondary B Aquifer. There are no recorded groundwater abstraction wells within 1 km of the site and the site is not located in any Source Protection Zone. A large fishing pond is present in the northeast of the site, with a second smaller pond present in the west. There are several drainage ditches running across the site. Wymott Brook and River Lostock are present 607m west and 670m south of site. The west of the site is located in Flood Zone 3 with a high probability of flooding; therefore, a Flood Risk Assessment will be required.
Ground and groundwater conditions encountered by investigation	The ground conditions as proven by the investigation(s) undertaken at the site comprise: • Surface Cover– locally in BH107A bituminous bound surface between 0.00m and 0.10m below ground level (bgl), • Topsoil – between 0.00m and 0.60m bgl, comprising slightly sandy clay, often slightly silty or slightly gravelly.

	• 'General' Made Ground – between 0.00m up to 1.60m bgl. Locally >3.45m bgl, comprising firm grey/brown sandy slightly gravelly clay. Gravel content of brick, siltstone, coal, mudstone and sandstone. • 'Pond Infill' Made Ground – between 0.00m and 1.40m bgl, comprising firm sandy gravelly clay or soft sandy slightly gravelly clay with a gravel content of concrete, brick, sandstone, mudstone, coal and limestone with rare fragments of timber, mental and plastic, and cobbles of concrete. • 'Pond Infill' Natural – between 1.40m and 3.20m bgl, comprising very soft greyish brown sandy clay with a moderate organic (humic) odour or very soft black and dark brown peaty clay with a moderate organic (humic) odour. • Head – between 0.10m up to 18.50m bgl, comprising firm to stiff brown clays, soft to firm sandy silty occasionally gravelly clays or loose to medium dense silty fine and medium sand. • Glacial Till – between 0.15m up to 23.50m bgl comprising at shallow depths firm to stiff reddish-brown clays and slightly sandy slightly gravelly clays. Where found at depth it was consistently stiff to very stiff reddish brown slightly sandy slightly gravelly clay. • Singleton Mudstone Member – between 23.50m unproven at 32.50m bgl comprising very weak to weak interbedded mudstones and siltstones. Groundwater was encountered at depths between 1.00m bgl and 2.50m bgl during the investigation. Water levels recorded post-fieldwork ranged from 0.24m bgl to 3.93m bgl (12.24m OD to 7.47m OD). In general, shallow groundwater was encountered sporadically as perched on top of the Glacial Till or Head deposits at the interface within the Made Ground. There were two deeper groundwater tables encountered. The first was within a deeper layer of sand deposits within the Head deposits at depths in the order of 8.50m to 15.50m bgl. This groundwater table was found under sub-artesian pressure rising to between 4.60m and 5.10m bgl. This groundwater table appears to be flowing from west to east towards Wymott Brook a tributary of the River Lostock. A second groundwater table was present at the Glacial Till/weathered Singleton Mudstone Member interface.
Conclusions of geotechnical assessment	Obstructions associated with former buildings, including foundations or floor slabs and services, should be anticipated. Excavation to proposed founding depth generally should be readily achievable with standard excavation plant. Heavy duty excavation plant/breaking equipment may be required to excavate through the existing construction or concrete obstructions. Trial pit faces were noted to remain generally vertical without collapse. The faces of shallow, near vertically sided excavations put down at the site are likely to remain stable for short periods of time. Water seepages into excavations are likely to be adequately controlled by sump pumping. Foundations are recommended to comprise: • Strip/trench fill/pad foundations for lightly loaded structures • Piled foundations for three to four storey house blocks. Allowable bearing capacity of between 50kN/m² and 100kN/m² should be available for strip/trench fill/pad foundations bearing onto the shallow firm cohesive soils of the Head deposits or Glacial Till. This is for outline design only and further geotechnical assessment is required for CAT 2 structures. Deepening of foundations/heave protection is likely to be required to allow for the effects of trees. Suspended floor slabs are recommended because of the depth of medium shrinkage potential clay soils. Suspended floor slabs over a void will be required within the influencing distance of trees. For pavement design a CBR of 2.5 % is recommended. Given the generally low CBRs (i.e., <2.5%) soil improvement will likely be required to achieve a target CBR of 2.5%.

	Soakaway drainage is considered unsuitable for this site. Design Sulphate Class - DS-2 and ACEC Class AC-2
GEO-ENVIRONMENTAL CONCLUSIONS	
Conclusions of contamination Generic risk assessment	Human health: • Hotspots for PAHs within the shallow Made Ground at CBR101, WS111E, WS118E and WS123E. • Hotspot for petroleum hydrocarbons within WS106E between 0.80m and 1.00m bgl. • Hard/cement type asbestos encountered within the Made Ground and also present at the surface to the east of the pavilion. Laboratory testing found no positive identification for non-visible asbestos loose fibres. Plant growth: • No risk posed to plant growth. Controlled Waters: • The site poses a low risk to controlled waters. Ground gases or vapours: • Low risk from ground gases, CS1 conditions apply. Radon: • The site is not in a Radon Affected Area. Water supply pipes: • The site is predominantly previously undeveloped, with brownfield soils associated with the land surrounding the existing prison. Assessment has indicated no exceedance of the threshold values in the greenfield part of the site. However, locally close to the existing prison, threshold values for petroleum hydrocarbons were exceeded specifically in WS106E, WS111E and WS118E at depths of a proposed pipe of 0.80m and 1.00m bgl. However, confirmation should be sought from the water supply company at the earliest opportunity.
Proposed mitigation measures	The mitigation measures proposed to remove unacceptable risks include: • The excavation and replacement of the PAHs and petroleum hydrocarbon hotspots. • hand picking of visible cement type asbestos encountered during the earthworks and disposal of site • examination of soils below and around all potential point sources including stores of fuels or machinery within the existing farm buildings and excavation of impacted soils (as possible depending on site constraints) • further investigation in the car park where the new boiler compound is proposed to ensure the bituminous bound hardstanding does not contain coal • excavation of Made Ground and natural soils as required to allow construction with appropriate materials management and processing of excavated soils using a combination of excavation and stockpiling and screening of soils to leave the site at the level required for the installation of a working platform, pavement construction and to ensure natural soils remain at cover system formation level to remove the requirement for a cover system. • Installation of Protectaline pipework. The methodology for the remediation should be presented in a Remediation Strategy, which will need to be submitted to the warranty provider and the regulatory authorities for approval. In addition, the production of a Materials Management Plan and its approval by a Qualified Person will be required to allow reuse of suitable material at the site. Verification reports by a competent independent geo-environmental specialist will be required following completion of any remedial works.
Waste management	Excavated soils to be disposed of as waste, are likely to be classed as non-hazardous soils.

FUTURE CONSIDERATIONS	
Further work	Following the ground investigation works undertaken to date, the following further works will be required: • demolition asbestos survey; • specialist UXO/UXB risk assessment in accordance with CIRIA Report C681 with regard to construction risk; • supplementary ground investigation in the existing prison car park and assessment in accordance with ADEPT & CWF Guidance (August 2019) to fully assess potential bituminous bound pavement arisings with regards to the presence of coal tar and waste disposal; • discussion and agreement with utility providers regarding the materials suitable for pipework; • discussions with regulatory bodies and the warranty provider regarding the conclusions of this report; • assessment of tree influence on foundations and design of foundations; • discussions with piling Contractors regarding conclusions of this report and design of the piles; • provision of geotechnical design for the Category 2 structures (earthworks and foundations); • production of a Remediation Strategy and Verification Plan (and agreement with the regulatory bodies and the warranty provider); • production of a Materials Management Plan relating to reuse of soils at the site; • remediation and mitigation work; and • verification of the earthworks, remediation and mitigation works.

This Executive Summary forms part of Hydrock Consultants Limited report number 19851-HYD-XX-XX-RP-GE-0001 and should not be used as a separate document.

1. INTRODUCTION

1.1 Terms of reference

In July 2021, Hydrock Consultants Limited (Hydrock) was commissioned by Pick Everard on behalf of the Ministry of Justice (the Client) to undertake a supplementary Phase 2 ground investigation at HMP Garth and Wymott, Leyland, Lancashire PR26 8NE.

The majority of site is currently tenanted farmland, with one other section within the former sports fields and pavilion in the north east part of HMP Wymott.

Hydrock understands that the redevelopment is to provide a new prison facility to accommodate 1,600 inmates. The proposed new prison is comprised of a number of blocks, which will generally be of three to four-storey reinforced concrete construction including a workshop, house blocks, kitchen building, central service hubs, entrance resource hub and support building, as well as several lightweight sub stations. It is proposed to relocate the pumping station in the north east of the site. As part of the proposed development a car park will be constructed in the south east of the site with a proposed SUDS pond. A proposed development layout (Pick Everard, 'Site block plan proposed planning', ref: 608623-0000-PEV-GHX011-22-DR-A-9100), is presented in Appendix A.

The works have been undertaken in accordance with Hydrock's proposal referenced (C-19851-FP-GE-0001.RevB issued 29 June 2021) and the Client's instructions to proceed (email dated 30 July 2021).

1.2 Objectives

The works have been commissioned to assist with the design of the development, specifically to identify ground conditions to facilitate design of buildings, car parking and site drainage.

The objective of the supplementary Ground Investigation is:

- to resolve uncertainties identified in the existing E3P Desk Study and Ground Investigation report by refining and updating the Ground Model, further determining geo-environmental and geotechnical site conditions and identifying key contamination risks by updating and finalising the Conceptual Model in accordance with the principles of LCRM;
- to identify geo-environmental mitigation requirements to enable development; and
- to provide preliminary geotechnical recommendations for design.

1.3 Scope

The site investigation is a supplementary Phase 2 Ground Investigation.

The scope of the Phase 2 Ground Investigation comprises:

- a ground investigation including trial pitting, soakaways, windowless sampling, cable percussive boring, rotary drilling to:
    - » obtain data on the ground and groundwater conditions of the site;
    - » allow collection of samples for geotechnical and chemical laboratory analysis;
    - » allow geotechnical field tests to be undertaken;
    - » install gas and groundwater wells;
- gas concentration and groundwater level monitoring;

- groundwater sampling;
- geotechnical and chemical laboratory analysis;
- updating of the preliminary Ground Model;
- completion of a geotechnical risk register;
- presentation of an initial geotechnical design recommendations;
- development of an updated Conceptual Site Model (CM), including identification of plausible pollution linkages;
- completion of a generic quantitative risk assessment of potential chemical contaminants to establish 'suitability for use' under the current planning regime;
- discussion of potential environmental liabilities associated with land contamination (soil, water and gas); and
- identification of outline mitigation requirements to ensure the site is 'suitable for use'.

1.4 Available information

The following documents, reports etc have been provided to Hydrock by the client for use in the preparation of this report:

- Pick Everard. 19/04/2021. 'Scope of Works for Supplementary Site Investigation, HMP Garth Wymott 2.' Ref. MC/EST/200799/17-3/S002 – Issue Number 02;
- E3P. December, 2020. 'Phase I & II Geo-environmental Site Assessment, Albatross and Razorbill.' Ref. 14-451-R1-1; and
- Pick Everard, 14/04/2021. 'Site block plan proposed planning', ref: 608623-0000-PEV-GHX011-22-DR-A-9100_S2_P06.

The Client has commissioned or obtained assignment of the above documents and Hydrock is entitled to full reliance upon their contents.

The desk study information contained within the provided report (E3P, 2020) is summarised within Section 2. The content has been used to formulate the preliminary Conceptual Site Model as the basis for preparing the preliminary geo-environmental exposure model and the preliminary geotechnical hazard identification presented in Section 2.

1.5 Regulatory context and guidance

The investigation work has been carried out in general compliance with recognised best practice, including (but not limited to) BS 5930:2015, BS 10175:2011+A2:2017 and the AGS (2006) 'Good Practice Guidelines for Site Investigations'.

The geo-environmental section of this report is written in broad accordance with BS 10175:2011+ A2:2017, 'Land Contamination: Risk Management' (LCRM, 2019) and the AGS (2006) 'Good Practice Guidelines for Site Investigations'.

The methods used follow a risk-based approach, the first stage of which is a Phase 1 desk study and field reconnaissance, with the potential geo-environmental risk assessed qualitatively using the 'source-pathway-receptor contaminant linkage' concept to assess risk as introduced in the Environmental Protection Act 1990 (EPA, 1990). Potential geotechnical risks are also assessed.

Phase 2 comprises intrusive ground investigation work and testing. The factual information from Phase 1 and Phase 2 are used to develop the Conceptual Model (CM). This CM is based on a ground model of the site physical conditions and an exposure model of the possible contaminant linkages. The CM forms the basis for Generic Quantitative Risk Assessment (GQRA) in accordance with current guidelines. This GQRA might lead to more Detailed Quantitative Risk Assessment (DQRA).

Professional judgement is then used to evaluate the findings of the risk assessments and to provide recommendations for the development.

The geotechnical section of this report is prepared in general accordance with BS EN 1997-1+A1: 2013, BS EN 1997-2:2007 and BS 8004:2015. This report constitutes a Ground Investigation Report (GIR) as described in Part 2 of Eurocode 7 (BS EN 1997-2) (EC7). However, it is not intended to fulfil the requirements of a Geotechnical Design Report (GDR) as specified in EC7.

Where relevant the NHBC Standards (2021), have also been applied.

The geo-environmental and geotechnical aspects are discussed in separate sections. Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. Designers should take all aspects of the investigation into account.

Remaining uncertainties and recommendations for further work are listed in Section 9 and Section 10.

Reference to the details of the approach and the methodologies adopted are provided in Appendix I.

2. PHASE 1 STUDY (DESK STUDY REVIEW AND FIELD RECONNAISSANCE)

2.1 Introduction

Hydrock has been provided with a combined Phase 1 and Phase 2 report for the site prepared by E3P (as detailed in Section 1). Hydrock generally agree with the findings of the Desk Study section and the following section is a summary of the pertinent information presented in the Desk Study section of that report, supplemented by additional information as required.

Hydrock has undertaken an updated field reconnaissance survey during the site investigation to visually assess potential geotechnical hazards, contaminant sources and receptors and ensure the site conditions as reported in the desk study are similar to current conditions.

2.2 Site location

The site is located near Ulnes Walton, 4.0km south west of Leyland, close to Junction 28 of the M6 motorway (National Grid Reference 350560 E, 420800 N).

The Site Location Plan (Hydrock Drawing 19851-HYD-XX-XX-DR-GE-0001) is presented in Appendix A.

2.3 Site description

The subject site is approximately 18 hectares; an irregular shaped relatively level parcel of land located at HM Wymott Prison in Ulnes Walton, Leyland. The south east sector is within the HM Wymott Prison site area, with the remainder of the site located to the north. HM Garth Prison is immediately west of site.

The land to the north of the prison forms part of a small farm holding that occupies the land with a number of agricultural buildings in the centre. The land surrounding the farm is separated into various paddocks for livestock. A series of sporadic semi-mature and mature trees are present across site, and a dense woodland area is present in the north west. A boiler house is present in the west and a sewage pumping station is present to the west of Pump House Lane. A farm building which is a former military store is located in the far east of the site, to the north of a large pond. An additional smaller pond is located in the north west corner of the site.

Within the prison boundary, to the east of the cell blocks, the site comprises a sports pitch and a shower/changing room block. Due to the coronavirus outbreak the fields had been left semi abandoned with the grass and obstacle course being overgrown. In the south east of the site a temporary coronavirus ward has been erected to allow prisoners to be segregated in the case of an outbreak within the prison.

Access to the northern sector is from Pump House Lane, off Willow Road. Access to the north west sector is via the HM Wymott Prison access roads. Access to the south east sectors is gained through HM Wymott Prison itself.

The Site Features Plan (Hydrock Drawing 19851-HYD-XX-XX-DR-GE-0002) is presented in Appendix A.

2.4 Site history

Historical mapping shows that up until the 1940s the site was predominantly agricultural land with a number of small ponds or post glacial feature kettle holes which were later infilled. Post 1940’s two sets of rail tracks transect the north of the site and terminate adjacent to the north west boundary where it’s understood a former ministry of defence explosive storage house. Historical mapping from the

1980s onward no longer records the explosive storage house. Between 1983 and 1984 HM Prison is recorded in the centre and south. It is not clear when the buildings in the north were appropriated for their current agricultural use. A building corresponding to the location of the current boiler house appears on mapping between 1900-1995. Buildings corresponding to the location of the current stables appear on mapping in 2006. A sewage pumping station is indicated in the east of the site on 2020 mapping, though the structure appears to have been present on mapping since the 1980's.

2.5 Geology

The geology of the site area is shown on British Geological Survey England and Wales Sheet 75 Preston, (Bedrock and Superficial Deposits), published in 2021. The superficial geology comprises Glacial Till in the east and far west of site, with Head Deposits shown to be present in the central and northern areas on the BGS mapping. The Glacial Till is described as clay to sandy clay, unsorted with common pebbles, cobbles and some boulders (Diamicton). The Head Deposits are described as rock fragments and pebbles in a clay to sand mix.

On the 1883 1: 63,360 Geological Survey of England and Wales Sheet 89NW (Preston, Kirkham, Chorley) Drift edition; the Glacial Till comprises Upper Boulder Clay, Sand and Gravels and Lower Boulder Clay. This map also refers to post-glacial deposits including peat to be present in the area.

The solid geology comprises the Singleton Mudstone Member, which is part of the Sidmouth Mudstone Formation (itself part of the Mercia Mudstone Formation).

The closest available BGS borehole records 0.4m of topsoil overlying clay and sand to the base of the borehole at 15.0m bgl.

A fault is shown on the BGS mapping 1.3km west of site, trending approximately northwest-southeast, with a downthrow to the east.

2.6 Hydrogeology

The Glacial Till and Head deposits are classed by the Environment Agency as a Secondary Undifferentiated Aquifer and Secondary A Aquifer respectively. The Singleton Mudstone Member is classified as a Secondary B Aquifer.

There are no recorded groundwater abstraction wells within 1 km of the site and the site is not in any Source Protection Zone.

There is no indication from the report of the risk of groundwater flooding.

2.7 Hydrology

A large fishing pond is present in the northeast of site, with a second smaller pond present in the west. There are several drainage ditches running across the site. There are no other pertinent water features within 250m of site.

Wymott Brook and River Lostock are present 607m west and 670m south of site respectively, both classified as 'C - Fairly Good' overall status under the Water Framework Directive.

The E3P report does not indicate whether there are any licensed surface water abstractions within 1km of the site.

2.8 Flood risk

The E3P report indicates the proposed development is predominantly located within a currently defined "Flood Risk Zone 1"; defined as land assessed as having less than 1 in 1,000 annual probabilities of river or sea flooding (< 0.1%). The west of the site is located in a Flood Zone 3 with a high probability of flooding; therefore, a Flood Risk Assessment will be required.

No further consideration of flood risk is undertaken in this report. Specialist flood risk advice should be sought with regard to drainage and flooding.

2.9 Mining or mineral extraction

The site is not located in a Coal Mining Reporting Area or Development High Risk Area; therefore, no further assessment is required.

The E3P report makes no comment on other mining or mineral extraction present or not on site or within the vicinity.

The site lies approximately 500m east of Hydrocarbon License Area PEDL024.

There are Mineral Planning Permissions, indicated as Ulnes Claypit, approximately 500m south west of site.

The risks to the site associated with mining or mineral extraction are considered to be low.

2.10 Natural ground instability

The E3P report indicates that the risk from Shrink-Swell Clay, Landslides, Collapsible Deposits and Running Sand is 'very low risk'. It also indicated there is 'no hazard' from Ground Dissolution and Compressible Ground.

2.11 Waste management

Potentially hazardous waste streams are unlikely to be generated at the site and none were observed during the preliminary site inspection.

There are no landfill sites within 250 m. The Envirocheck report lists potentially infilled ground relating to former water features on site. Historical mapping confirms the presence of infilled ponds on site.

2.12 Regulatory information

There are no pertinent regulatory entries, such as Pollution Incidents or Discharge Consents, listed within 250m of the site. Additionally, there are no active entries within the trade directory for industrial land uses within 500m.

2.13 Natural soil chemistry

The E3P report did not identify any significantly elevated naturally occurring elements that may present a risk to future site users.

2.14 Radon and ground gas

The previous desk study indicates that the site is in a Lower probability Radon Area where less than 1% of homes are estimated to be at or above the Action Level. Therefore, no radon protection measures are required for new buildings at this location in line with current guidance.

2.15 Unexploded ordnance (UXO)

The previous desk study indicates a low risk and no further assessment is required with regard to UXO in relation to ground investigation.

However, it also refers to a third-party report, which has not been made available to Hydrock. The Brimstone UXO Desk Study (report ref: PRA-20-1311, October 2020) states:

"During WWII, the Site remained open fields, however one explosives storage house (ESH) was built on Site with associated rail tracks (representing a small portion of the wider dispersed depot site). Additional tracks leading to other ESHs crossed the Site also."

The E3P report states that the recommendations of the Brimstone UXO Study is the completion of a Stage 2 Detailed Risk Assessment for the proposed development works.

3. OUTLINE CONCEPTUAL MODEL

3.1 Introduction

The outline Conceptual Model (oCM) incorporates evidence from the site walkover, the Desk Study and previous investigations carried out at the site. The formulation of an outline Conceptual Model is a key component of the LCRM methodology. The oCM incorporates a ground model of the site physical conditions and an exposure model of the possible contaminant linkages; it forms the basis for Generic Quantitative Risk Assessment (GQRA) in accordance with current guidelines.

3.2 Ground model

The preliminary ground model presented in Section 2.5 provides an understanding of the ground conditions and is the basis for preparing the preliminary geotechnical hazard assessment (Section 3.3) and the preliminary geo-environmental exposure model (Section 3.4).

3.3 Geotechnical hazard identification

3.3.1 Context

The preliminary geotechnical hazard identification has been undertaken in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622.

The following section sets out the identified geotechnical hazards and the development elements potentially affected (see Table J.1 in Appendix G for further information).

3.3.2 Plausible geotechnical hazards

Plausible geotechnical hazards identified at the site are:

- Uncontrolled Made Ground (variable strength and compressibility).
- Former infilled ponds.
- Soft / loose compressible ground (low strength and high settlement potential).
- Shrinkage / swelling of the clay fraction of soils under the influence of vegetation.
- Variable lateral and vertical changes in ground conditions.
- Attack of buried concrete by aggressive ground conditions.
- Obstructions.
- Existing below ground structures to remain (adjacent prison fence line).
- Shallow groundwater.
- Changing groundwater conditions.
- Loose Made Ground, leading to difficulty with excavation and collapse of side walls.

3.3.3 Potential development elements affected

Development elements potentially affected by geotechnical hazards are:

- Buildings – foundations.
- Buildings – floor Slabs

- Roads and pavements.
- Services.
- Construction staff, vehicles and plant operators.
- Concrete below ground.

Health and safety risks to site Contractors and maintenance workers have not been assessed during these works and will need to be considered separately during design.

The above plausible geotechnical hazards and development elements affected have been carried forward for investigation and assessment. The investigation is presented in Section 5 and the assessment is presented in Section 6.

3.4 Geo-environmental exposure model

3.4.1 Context

The preliminary exposure model is used to identify geo-environmental hazards and to establish potential pollution linkages, based on the source-pathway-receptor (SPR) approach.

A viable pollution linkage requires all the components of an SPR to be present. If only one or two are present, there is no linkage and no further assessment is required.

3.4.2 Potential contaminants

3.4.2.1 Potential on-site sources of contamination

Given the modern age of the electrical substation in the north of the site (post 1976), polychlorinated biphenyls were unlikely to have been used as heat transfer fluids or lubricants.

- Made Ground, associated with historical construction activities and imported fill, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAH and petroleum hydrocarbons (S01).
- Made Ground, potentially containing asbestos fibres and Asbestos Containing Materials from demolition of former farm or MOD structures (S02).
- Made Ground, associated with infilled ponds or drainage ditches, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAH and petroleum hydrocarbons (S03).
- Hydrocarbon fuels and oils from the operation of former and current agricultural machinery on the site (S04).
- Various contaminants associated with possible historical MOD rail tracks and explosive store on site including heavy metals, volatile or semi volatile organic compounds, PAH's and hydrocarbon compounds- *explosive compounds unlikely to be present in soils as there is no anecdotal evidence of mis-handling of explosive leading to an explosion on the site* (S05).
- Contamination from sewage from the pumping station, potentially containing elevated heavy metals (S06).
- PAH's, heavy metals and inorganic compounds associated with the Boiler House on site (S07).
- Coal tar, potentially present in the bituminous bound pavements present in the form of roads, car parks, and pavements (S08).

- Ground gases (carbon dioxide and methane) from organic materials in deep Made Ground deposits, natural pond deposits or infilled pond deposits (S09).
- Hydrocarbon vapours from potential VOC and petroleum hydrocarbon spillages/leaks (S10).
- Asbestos within existing buildings (S11).

Given the modern age of the electrical substation in the north of the site (post 1976), polychlorinated biphenyls were unlikely to have been used as heat transfer fluids or lubricants.

3.4.2.2 Potential off-site sources of contamination

- Ground gases (carbon dioxide and methane) from made ground or organic materials in the infilled ponds in the vicinity of site (S12).

3.4.3 Potential receptors

The following potential receptors in relation to the proposed land use have been identified.

- People (neighbours, site end users) (R01).
- Development end use (buildings, utilities and landscaping) (R02).
- Groundwater: Secondary A aquifer status of the Head, Secondary B aquifer status of the bedrock, Secondary Undifferentiated Aquifer status of the Glacial Till (R03).
- Surface water: on-site drainage ditch and ponds (R04).

3.4.4 Potential pathways

The following potential pathways have been identified.

- Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).
- Direct contact with substances deleterious to building materials e.g., VOCs (P02).
- Methane ingress via permeable soils and/or construction gaps (P03).
- VOC and petroleum hydrocarbon vapour ingress via permeable soils and/or construction gaps (P04).
- Root uptake by plant (P05).
- Migration of contaminant via leachate migration through the unsaturated zone in the Head or Glacial Till (P06).
- Migration of contaminant from the groundwater within the Made Ground/Head or Glacial Till to the groundwater within the Singleton Mudstone aquifer (P07).
- Surface water via overland flow (P08).
- Surface water via base flow from groundwater (P09).

Health and safety risks to site development contractors and maintenance workers have not been assessed as part of this study and will need to be considered separately.

The above sources, pathways and receptors have been considered as part of the Preliminary Risk Assessment in accordance with LCRM (2019), are considered to be plausible in the context of this site and have been carried forward for investigation and assessment. The investigation is presented in Section 5 and the assessment is presented in Section 0. An assessment of the Source – Pathway – Receptor linkages is undertaken following the assessment (Section 0) and is presented in Appendix H (Table K.1).

4. GROUND INVESTIGATIONS

4.1 Investigation rationale

The ground investigation rationale was dictated by the client based on the findings of the E3P Phase 1 & 2 combined risk assessment and is summarised in Table 4-1.

For the investigation rationale of the historical investigations, please refer to the E3P report referenced 14-451-R1-1.

Table 4-1: Investigation rationale

Location	Purpose
BH101 - BH109	To assess deeper ground conditions and to allow SPTs to be undertaken. To allow collection of samples for geotechnical characterisation. To allow collection of samples for contamination testing. Installation of gas and groundwater monitoring and sampling wells.
BH106	To assess deeper ground conditions and to allow SPTs to be undertaken. To collect samples of deeper rockhead to undertake strength testing for pile design. To allow collection of samples for geotechnical characterisation. To allow collection of samples for contamination testing. Installation of gas and groundwater monitoring and sampling wells.
CBR101 - CBR124	To allow in-situ testing giving CBR values in order to assess shallow ground conditions for road and pavement design. Targeted at areas where these features will be present.
SA101 - SA106	To allow infiltration testing to occur to BRE 365.
WS101-WS207	To assess shallow ground conditions and to allow SPTs to be undertaken. To allow collection of samples for chemical testing and geotechnical characterisation. Targeted to investigate areas of potential contamination sources. Installation of gas and groundwater monitoring and sampling wells.

4.2 Constraints

Inclement weather and unexpected ground conditions were encountered. At BH107 thick concrete was encountered, necessitating relocation of the borehole. BH104 and BH108 were moved a few metres due to livestock and an overhead cable respectively. Soakaway testing could not be undertaken in SA105 or SA105A due to the presence of potential service bedding in SA105 and a redundant land drain in SA105A.

4.3 Site works

The fieldwork took place between 16 August and 09 September 2021 and is summarised in Table 4-2. The ground investigation locations were surveyed in using topographic survey quality GPS and are shown on the Exploratory Hole Location Plan (Hydrock Drawing 19851-HYD-XX-XX-DR-GE-0003) in Appendix B.

The logs, including details of ground conditions, soil sampling, *in situ* testing and any installations, are also presented in Appendix B.

The weather conditions during the Hydrock fieldwork varied between hot and sunny to mild with wind and heavy rain.

Table 4-2: Summary of site works

Activity	Method	No. *	Depth Range* (m bgl)	In situ tests	Notes (e.g. installations)
Drilling, Pitting and Probing					
Boreholes	Cable percussive	9	17.45-23.50	SPTs Hand shear vane (HSV) in hand pits	63mm HDPE wells with gas taps in 7 no. holes
	Rotary cored	1	32.50		Follow on in BH106
	Windowless sampler	7	5.45		63mm HDPE wells with gas taps in 3 no. holes
Trial pits	Machine (JCB 3X)	30	1.5	Hand shear vane (HSV)	Excavation for Soakaways and LWDs.
Hand dig	Hand-excavated	3	0.30		Contamination Testing Zone
E3P Drilling					
Boreholes	Windowless sampler	25	5.45	SPTs	63mm HDPE wells with gas taps in 6 no. holes
Other in situ testing or monitoring					
CBRs	Hand held	24	0.25 - 0.80	Lightweight Deflectometer (LWD)	In CBR101-CBR124
Soakaways	BRE 365	6	1.2 - 1.8	Infiltration	In SA101 - SA106

** Does not include locations terminated and relocated*

Wells for monitoring groundwater levels and ground gas concentrations, and to facilitate the sampling of groundwater, were installed in a number of the windowless sampler and cable percussion boreholes. A summary of the monitoring well installations is presented in Table 4-3.

Table 4-3: Summary of monitoring installations

Location	Ground level (m OD)	Standpipe diameter (mm)	Screen top and base depth (m bgl)	Screen top and base elevation (m OD)	Strata targeted
Hydrock Installations					
BH101	10.49	50	6.0 to 20.0	4.49 to -9.51	Head and Glacial Till
BH103	10.98	50	5.0 to 20.0	5.98 to -9.02	Head and Glacial Till
BH105	10.42	50	3.0 to 20.0	7.42 to -9.58	Head and Glacial Till
BH106	13.16	50	14.0 to 26.0	-0.84 to -12.84	Glacial Till and Singleton Mudstone
BH107a	11.05	50	5.0 to 13.0	6.05 to -1.95	Head
BH108	11.40	50	3.0 to 12.0	8.4 to -0.6	Head
BH109	11.87	50	5.0 to 13.0	6.87 to -1.13	Head
WS102	11.84	50	0.5 to 3.0	11.34 to 8.84	Infilled and Natural Pond
WS103	14.21	50	0.5 to 2.50	13.71 to 11.71	Glacial Till
WS104	12.48	50	0.5 to 2.50	11.98 to 9.98	Glacial Till
E3P Installations					
WS102E	10.80	50	0.5 to 4.00	10.30 to 6.80	Head
WS108E	11.40	50	0.5 to 4.00	10.90 to 7.40	Head
WS109E	10.50	50	0.5 to 4.00	10.00 to 6.50	Head
WS112E	12.50	50	0.5 to 4.00	12.00 to 8.50	Glacial Till
WS119E	12.20	50	0.5 to 4.00	11.70 to 8.20	Glacial Till

Location	Ground level (m OD)	Standpipe diameter (mm)	Screen top and base depth (m bgl)	Screen top and base elevation (m OD)	Strata targeted
WS123E	12.50	50	1.00 to 4.00	11.50 to 8.50	Glacial Till

4.4 Geo-environmental testing

4.4.1 *Sampling strategy and protocols*

Exploratory hole positions were determined by the client in reference to the site conditions and uncertainties identified in the E3P report.

The windowless sample locations were targeted for specific investigation, but a reasonably even spacing was used for the remainder of the site.

No specific sampling statistics or grid were utilised in this instance.

Samples were taken, stored and transported in general accordance with BS 10175:2011+A2:2017.

4.4.2 *Site screening tests*

A photoionization detector (PID) (Tiger Phocheck 10.3ev) was used during the fieldwork to screen samples. The PID readings are detailed on the exploratory hole logs in Appendix B.

4.4.3 *Geo-environmental monitoring*

Gas monitoring boreholes have been monitored on six occasions by Hydrock and two occasions by E3P. The results are presented in Appendix D. Monitoring has been completed.

4.4.4 *Geo-environmental laboratory analyses*

The chemical test certificates for testing undertaken by Hydrock are provided in Appendix E. Wherever possible, UKAS and MCERTS accredited procedures have been used.

The chemical test certificates for testing undertaken as part of E3P investigation can be found within the E3P ground investigation report referenced 14-451-R1-1.

The geo-environmental analyses undertaken on soils are summarised in Table 4-4.

Table 4-4: Geo-environmental analyses of soils

Determinand Suite	Topsoil	Made Ground	Head	Glacial Till
Hydrock Data				
Hydrock minimum suite of determinands for solids*	3	15	-	1
Speciated aliphatic and aromatic banding Total petroleum hydrocarbons including BTEX and MTBE by HS-GC/MS and GC/FID (Hydrock Tier 2 TPH Suite)	1	4	-	-
Benzene, toluene, ethylbenzene and xylene (BTEX) by HS-GC/MS	1	4		-
MTBE (Methyl Tertiary Butyl Ether) by HS-GC/MS	1	4		-
Asbestos Bulk Identification	-	6	-	-
WAC Full Solid Suite	-	2	-	-

Determinand Suite	Topsoil	Made Ground	Head	Glacial Till
E3P Data				
E3P minimum suite of determinands for solids**	6	11	2	1
Speciated Total petroleum hydrocarbons by HS-GC/MS and GC/FID (Hydrock Tier 1 TPH Suite)	-	18	-	-
Volatile organic compounds by HS-GC/MS	-	1	-	-
Semi-volatile organic compounds by GC-MS	-	1	-	-
*Hydrock minimum soil suite comprises: As, B (water soluble), Be, Cd, Cr (total), Cr (VI), Cu, Hg, Ni, Pb, S (elemental), Se, V, Zn, cyanide (total), sulphide, pH, asbestos fibres, speciated polynuclear aromatic hydrocarbons (PAH, by GC-FID), total phenols and fraction of organic carbon **E3P minimum soil suite comprises: As, Cd, Cr (total), Cr (VI), Cu, Hg, Ni, Pb, S (elemental), Se, V, Zn, cyanide (total), sulphide, pH, asbestos fibres, speciated polynuclear aromatic hydrocarbons (PAH, by GC-FID), total phenols and fraction of organic carbon				

The soils chemical test data (including both Hydrock and historical data) are interpreted and assessed in Sections 7.3 and 7.4.

The geo-environmental analyses undertaken on waters for testing undertaken by Hydrock are summarised in Table 4-5.

Table 4-5: Geo-environmental analyses of waters

Determinand Suite	Ground-water	Leachates
Hydrock Data		
Hydrock minimum suite of determinands for waters	4	-
Speciated aliphatic and aromatic banding Total petroleum hydrocarbons by HS-GC/MS and GC/FID (Hydrock Tier 2 TPH Suite)	2	-
Benzene, toluene, ethylbenzene and xylene (BTEX) by HS-GC/MS	2	-
MTBE (Methyl Tertiary Butyl Ether) by HS-GC/MS	2	-
E3P Data		
E3P minimum suite of determinands for waters	4	5
Speciated aliphatic and aromatic banding Total petroleum hydrocarbons by HS-GC/MS and GC/FID (Hydrock Tier 2 TPH Suite)	4	5
Benzene, toluene, ethylbenzene and xylene (BTEX) by HS-GC/MS	4	5
MTBE (Methyl Tertiary Butyl Ether) by HS-GC/MS	4	5

The groundwater chemical test data (including both Hydrock and historical data) are interpreted and assessed in Section 7.5.

4.5 Geotechnical testing

The geotechnical tests undertaken by Hydrock are summarised in Table 4-6 and the test certificates are provided in Appendix C. Wherever possible, UKAS accredited procedures have been used.

The geotechnical tests undertaken as part of E3P investigation can be found within the E3P ground investigation report referenced 14-451-R1-1.

Table 4-6: Summary of sample numbers for geotechnical tests

Test	Made Ground	Head	Glacial Till	Singleton Mudstone
Hydrock Data				
Natural moisture content	3	11	8	-
Atterberg limits	2*	6	2	-
Particle size distribution (sieve/sedimentation)	-	4	3	-
Sulphate and aggressive chemical environment classification for buried concrete classification (full BRE SD1 suite)	2	3	-	1
Single stage undrained triaxial compressive strength	-	10	5	-
One dimensional oedometer consolidation	-	3	-	-
Remoulded California Bearing Ratio at natural moisture content (soaked)	3	1	-	-
Organic Matter Content	2*	-	-	-
Point Load Strength	-	-	-	8
E3P Data				
Natural moisture content	4	16	10	-
Atterberg limits	4	13	10	-
Optimum Moisture Content / Maximum Dry Density Relationship (2.5kg rammer)	1	3	1	-
Particle size distribution (sieve/sedimentation)	-	4	1	-
Sulphate and aggressive chemical environment classification for buried concrete classification (full BRE SD1 suite)	1	1	-	-
Single stage undrained triaxial compressive strength	-	5	6	-
One dimensional oedometer consolidation	1	5	3	-
*Undertaken on pond infill- interpretated as Made Ground for the purpose of this table.				

The geotechnical test data (including both Hydrock and E3P) are summarised in Section 5.7 and interpreted in Section 6.

5. GROUND INVESTIGATION RECORDS AND DATA

5.1 Physical ground conditions

5.1.1 Summary of strata encountered

The following presents a summary of the properties of the ground and groundwater conditions encountered, based on field observations, interpretation of the field data and laboratory test results, taking into account drilling, excavation and sampling methods, transport, handling and specimen preparation.

All relevant data from the Hydrock investigation discussed in Section 4 as well as any reliable data from previous investigations noted in Section 1.4 are used from this point forward.

Details of the Hydrock provided in the logs in Appendix B, the E3P logs can be found within the E3P ground investigation report referenced 14-451-R1-1. A summary of the ground model is presented in Table 5-1 and the individual strata are described in the sections below. Relevant cross sections are presented in Appendix B and the transect of the cross sections are Cross Section Plan (Hydrock Drawing 19851-HYD-XX-XX-DR-GE-0007) in Appendix B.

Table 5-1: Strata encountered

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Thickness (m) (range)	Thickness (m) (average*)
Surface Cover – bituminous bound pavement	Surface	0.1	0.1	-
General Made Ground	0.0 - 0.50	0.2 - 1.60 >1.5 - >3.45⁺	0.1 - 1.45 >1.45 - 3.45⁺	0.6
Pond Infill Made Ground	Surface	1.40	1.40	-
Pond Natural Sediments	1.40	3.20	1.80	-
Topsoil	Surface	0.05 - 0.60	0.05 - 0.60	0.26
Head Deposits	0.10 - 1.60	1.0 - 18.50 >5.45⁺	0.50 - 18.20 >5.45⁺	13.31
Glacial Till	0.15 - 18.50	23.50	>0.3 - >20.45	23.10
Singleton Mudstone Member	23.50	>32.50	>9.0	Not proven

**Where proven.*

⁺where not proven

There is significant lateral variation in the superficial deposits, with Head present in the centre and north of site which lies above Glacial Till. Where the Head Deposits is interpreted not to be present the Glacial Till is found at very shallow depths.

5.1.2 Surface covering

The following surface cover was identified during the field reconnaissance and the fieldworks:

- Bituminous bound pavement hardstanding, in the car parks and roads, covering approximately 10% of the site and noted to be in good condition poor condition with no significant potholes or scars).
- Grassed, cropped, bare fields and trackways, covering approximately 75% of the site.

- Structures and concrete hardstanding (farm buildings, boiler house, external prison offices etc.) covering approximately 5% of the site.
- Vegetation (trees, shrubs, brambles), covering approximately 10% of the site.

5.1.3 Bituminous bound pavement

The thickness of the macadam surface was only seen at one location, BH107, and was found to 0.1m bgl. The bituminous bound pavement was found to resting directly on a granular sub-base.

5.1.4 Topsoil

The majority of exploratory holes encountered topsoil.

Topsoil was between 0.05m and 0.60m thick, with an average thickness of 0.26m. The topsoil generally comprised soft dark brown slightly sandy clay, often slightly silty or slightly gravelly. Some topsoil contained minor anthropogenic fragments, such as brick or ceramics.

For the purposes of this report, topsoil is defined as the upper layer of an in-situ soil profile, usually darker in colour and more fertile than the layer below (subsoil), which is a product of natural chemical, physical, biological and environmental processes, but does not imply compliance with BS 3882:2015. Reuse of topsoil as a growing medium at the site should be determined by the landscape architect or the landscape Contractors.

5.1.5 Made Ground

Made Ground was recorded across the majority of site and the depth to the base of the Made Ground is shown on Hydrock Drawing 19851-HYD-XX-XX-DR-GE-0004 in Appendix A.

Where proven, the depth to base was 0.20 - 1.60m bgl, though unproven depths ranged from >0.25 - >3.45m bgl. Many unproven depths were observed in the CBR pits, which did not need to progress beyond the shallow soils and should not be interpreted as indicative of deep Made Ground.

Reworked Topsoil

While some strata defined as topsoil included rare anthropogenic inclusions, where these were of a higher proportion the strata were defined as Made Ground. As such much of the shallow made ground found at the surface or below the topsoil in the fields comprised soft to firm (dark) brown sandy slightly gravelly clay. Gravel tended to comprise angular to subangular fine to coarse sandstone, limestone, mudstone, brick, coal, with rare fragments of ceramics and glass. Occasionally a comparable clayey sand stratum was observed. These strata were generally found up to 0.40m bgl, though were found deeper in some areas e.g., to 0.80m bgl in SA101.

Cohesive Made Ground

A firmer cohesive Made Ground was often observed, typically comprising firm grey/brown sandy slightly gravelly clay with low cobble content. Gravel is angular to subangular fine to coarse of brick, siltstone, coal, mudstone and sandstone. Cobbles are subangular of brick. This Made Ground was encountered at the greatest deepest during the E3P site works to 3.45m (unproven) in WS101 in the vicinity of the Boiler House, which is considered an outlier for Made Ground depth across the site.

Reworked natural strata

Occasionally firm grey/brown clays were observed (with or without gravels) that had the appearance of reworked natural ground. These were typically <0.50m thick and found above glacial till or head.

Other notable Made Ground strata

- In BH101 light grey angular cobbles of sandstone and quartzite were found between 0.30 and 0.80m bgl.
- Ashy, sandy gravels or gravelly sands were observed in BH104 between 0.05 and 0.40m bgl, CBR101 between 0.30m and 0.60m bgl, CBR105A between 0.5m and 0.6m bgl, and SA104 between 0.45m and 0.60m bgl.
- In SA105 and SA105A a soft to firm dark grey/brown sandy gravelly CLAY with low cobble and boulder content to approx. 1.00m bgl. Gravel is angular to subangular fine to coarse of brick, concrete, coal, mudstone, slate, sandstone and quartzite with rare fragments of plastic, timber and polystyrene. Cobbles and boulders are subangular of concrete. In SA105 this overlay a light grey angular to subangular fine to coarse gravel of limestone from 1.00 -1.20m bgl.

5.1.5.1 Pond Fill Made Ground

The pond fill made ground was found between 0.00m and 1.40m bgl in WS102, which targeted the location of a historical infilled pond.

It comprised a firm sandy gravelly clay with medium cobble content to 0.70m bgl, which contained gravel of concrete, brick, sandstone, mudstone, coal and limestone with rare fragments of timber, mental and plastic, and cobbles of concrete.

This overlies a soft sandy slightly gravelly clay with low cobble content. Gravel was comparable to the strata above, with cobbles of brick and mudstone.

5.1.6 Natural Pond Sediments

The natural pond sediments were found between 1.40m and 3.20m bgl in WS102, which targeted the location of a historical infilled pond.

Very soft greyish brown sandy clay with a moderate organic (humic) odour was observed between 1.40m and 2.00m bgl.

Very soft black and dark brown peaty clay with a moderate organic (humic) odour was observed between 2.00m and 3.20m bgl.

Recovery of both strata was limited.

5.1.7 Head Deposits

Head Deposits were encountered underlying the Made Ground or topsoil in the centre and north of the site. Head Deposits are between 0.5m and 18.20m thick where proven, and while at some locations the depth of Head is unproven in the window sample boreholes, it is considered unlikely to exceed the latter. Deeper head was encountered in the centre of the north of the site, where it was proven up to 19.00 bgl.

Head generally consisted of three strata:

- Firm to stiff brown clays, often slightly sandy slightly gravelly and similar in appearance to the Glacial Till, found from surface or below topsoil/Made Ground to approx. 9.00m bgl.
- Soft to firm sandy silty, occasionally gravelly, clays; generally found from 9.00m bgl to between 15.00m and 19.00m bgl.
- Loose to medium dense silty fine and medium sand, occasionally gravelly, between 0.30m and 3.00m thick found above, below and within the silty clays.

Thin bands of sands, gravels and silty clays were also found at shallow depths across the centre and south.

The Head Deposits have been characterised primarily by the presence of the silty clays and associated sand bands at depth. Where deeper boreholes were not progressed and the silty material is not seen it is difficult to determine where the shallow superficial soils are Head or Glacial Till, given their very similar appearance.

The Head Deposits are considered to represent the Head Deposits shown on the BGS mapping, though appear to cover a wider area westward across the centre of site.

5.1.8 Glacial Till

The 'Top of Glacial Till Plan' is shown on Hydrock Drawing 19851-HYD-XX-XX-DR-GE-0005 in Appendix A.

Glacial Till was encountered at shallow depths underlying the topsoil/Made Ground in the east and south of the site, and much deeper below the Head Deposits present in the centre, east and north of the site area. The base and thickness were only proven at BH106, at 23.50m bgl and 23.10m respectively.

The shallow Glacial Till generally consisted of firm to stiff, reddish brown, clays and slightly sandy, slightly gravelly clays. Where found at depth it was consistently stiff to very stiff, reddish brown, slightly sandy, slightly gravelly clay. Gravel was generally angular to rounded, fine to coarse, of mudstone and siltstone.

Where deeper boreholes were not progressed and the silty material is not seen it is difficult to determine where the shallow superficial soil deposits are Head Deposits or Glacial Till, given their very similar appearance.

The Glacial Till is considered to represent the Till shown on the BGS mapping.

5.1.9 Singleton Mudstone Member

The Singleton Mudstone Member was encountered underlying the Glacial Till in BH106, in the north east of the site. It was found from 23.50m to 32.50m, with the base and thickness remaining unproven.

Given the very stiff Glacial Till strata found in this location is found at similar depths across the site, it is anticipated that the depth to rockhead is also similar across the site.

This stratum comprised very weak to weak interbedded mudstones and siltstones with very closely to medium spaced fracture sets.

5.2 Obstructions

Obstructions were encountered in three boreholes during the investigation.

A refusal in WS101E was recorded as the reason for borehole termination. This was within soft, brown gravelly (mudstone and brick) clay Made Ground, and is likely to be caused by a large cobble or boulder.

Cobbles of concrete within a gravelly clay, prevented advancement of the hand pit for WS107.

A 900mm thickness of reinforced concrete was encountered in BH107, which resulted in the borehole being relocated. The obstruction appeared to comprise an upper concrete slab from 0.3m to 0.7m bgl, overlying a lower concrete slab from 0.7m to 1.2m bgl with the thickness unproven. Rebar 10mm thick was found at approximately 0.4m, 0.6m, and 0.8m bgl within the concrete.

5.3 Visual and olfactory evidence of contamination (soil)

In addition to the more common man-made constituents (ash, clinker, plastic, etc), described above in Section 5.1.4, visual and olfactory evidence of contamination was noted in one of the E3P exploratory hole locations, summarised in Table 5-2.

Table 5-2: Visual and olfactory evidence of contamination - soils

Stratum	Location	Depth (m bgl)	Description
Made Ground	WS106E	0.80 – 1.00	Hydrocarbon odours

5.4 Groundwater

5.4.1 Groundwater observations and levels

Groundwater encountered during the investigation is listed in Table 5-3. A groundwater observation represents the depth at which groundwater was first observed and is likely to be deeper than the actual groundwater table level at that location.

Table 5-3: Groundwater occurrence during the fieldwork

Stratum	Location	Fieldwork		Comment
		Groundwater observation (m bgl)	Rose to after 20 mins (m bgl)	
Head	BH104	10.00	4.80	-
	BH105	9.00	4.60	-
	BH105	15.50	10.40	-
	BH107A	9.30	4.90	-
	BH108	8.70	4.90	-
	BH109	8.50	5.10	-
	BH109	12.40	9.30	-
	WS106	2.50	1.80	-
	WS105E	1.00	-	Seepage.
	WS106E	1.50	-	Seepage.
	WS110E	1.50	-	Seepage.
	WS117E	1.00	-	Seepage.
Glacial Till	WS119E	3.00	-	Seepage.
	WS121E	3.00	-	Seepage.
	WS124E	3.50	-	Seepage.
Made Ground	WS102	1.20	-	-

Stratum	Location	Fieldwork		Comment
		Groundwater observation (m bgl)	Rose to after 20 mins (m bgl)	
	WS101E	2.00	-	Seepage.
	WS118E	1.00	-	Seepage.

Groundwater levels recorded during post-fieldwork monitoring are summarised in Table 5-4.

Table 5-4: Groundwater level data summary

Stratum	Date range	Screen top and base depth (m bgl)	Location	Post-fieldwork monitoring	
				Depth to groundwater (range) (m bgl)	Groundwater elevation (range) (m OD)
Head and Glacial Till	06/10/21-08/03/22	6.0 to 20.0	BH101	1.88 - 2.23*	8.61 - 8.26
Head and Glacial Till		5.0 to 20.0	BH103	2.50 - 2.90*	8.48 - 8.08
Head and Glacial Till		3.0 to 20.0	BH105	1.60 - 2.35*	8.82 - 8.07
Glacial Till and Singleton Mudstone		14.0 to 26.0	BH106	1.67 - 2.16*	11.49 - 11.00
Head		5.0 to 13.0	BH107A	3.01 - 3.80*	8.04 - 7.25
Head		3.0 to 12.0	BH108	3.53 - 3.93	7.87 - 7.47
Head		5.0 to 13.0	BH109	1.66 - 2.54*	10.21 - 9.33
Infilled Pond		0.5 to 3.0	WS102	0.45* - 1.08	11.39 - 10.76
Glacial Till		0.5 to 2.50	WS103	0.32	13.89
Glacial Till		0.5 to 2.50	WS104	0.24* - 0.80	12.24 - 11.68
Head	13/11/20-01/12/20	0.5 to 4.00	WS102E	0.65	10.15
Head		0.5 to 4.00	WS108E	2.82 - 3.38	8.02 - 8.58
Made Ground		0.5 to 4.00	WS109E	0.41 - 0.42*	10.08 - 10.09
Glacial Till		0.5 to 4.00	WS112E	0.40 - 0.42*	12.08 - 12.10
Glacial Till		0.5 to 4.00	WS119E	No access	
Glacial Till		1.00 to 4.00	WS123E	No access	

** Dips above response zone*

5.4.2 *Infiltration tests*

The results of the infiltration testing undertaken are summarised in Table 5-5. The results sheets are presented in Appendix B.

Testing was carried out in general accordance with BRE Digest 365 (BRE DG365) (2016).

Table 5-5: Infiltration test results

Stratum	Location	Depth to base of pit (m bgl)	Infiltration rate (m/s)	
			Run 1	Range
Head	SA101	1.80	Limited to no infiltration- unable to calculate infiltration rates	-
	SA103	1.50		-
Glacial Till	SA102	1.65		-
	SA104	1.60		-

Stratum	Location	Depth to base of pit (m bgl)	Infiltration rate (m/s)	
			Run 1	Range
	SA106	1.50		-

5.4.3 *Groundwater summary*

In general, shallow groundwater was encountered sporadically as perched on top of the Glacial Till or Head Deposits at the interface with the Made Ground. The shallow perched groundwater is not present site-wide and appear to be localised.

There were two deeper groundwater tables encountered. The first was within a deeper layer of sand deposits within the Head Deposits at depths in the order of 8.50m to 15.50m bgl. This groundwater table was found under sub-artesian pressure rising to between 4.60m and 5.10m bgl. This groundwater table appears to be flowing from west to east towards Wymott Brook a tributary of the River Lostock. A second groundwater table was present at the Glacial Till/weathered Singleton Mudstone Member interface.

Infiltration testing was undertaken within the shallow Head Deposits and Glacial Till Deposits. Due to limited to no infiltration within SA101 to SA104 and SA106 an infiltration rate could not be calculated suggesting the site is unsuitable for soakaway drainage design.

5.5 Ground gases (carbon dioxide and methane)

Records from the gas monitoring boreholes are presented in Appendix D and summarised in Table 5-6.

To date three monitoring visits have been undertaken, with a further three visits to be undertaken as part of the current commission. The data are assessed in Section 7.6.

Table 5-6: Range of ground gas data

Stratum	Methane (%)	Carbon dioxide (%)	Oxygen (%)	Steady flow rate (l/hr)	Comment
Made Ground	<0.1	7.7 - 8.6	9.5 - 11.7	<0.1	Two boreholes.
Pond Infill & Natural	<0.1 - 3.8	0.9 - 7.5	3.9 - 20.4	<0.1 - 4.9	One borehole.
Head	<0.1 - 0.2	0.2 - 10.1	0.6 --21.6	<0.1 – 13.4	Nine boreholes.
Glacial Till & Singleton Mudstone	<0.1 - 4.6	<0.1 - 6.8	4.6 - 21.4	<0.1 – 21.2	Three boreholes.

5.6 Organic vapours

The PID results are provided on the logs in Appendix B. No PID results exceeded 1ppm.

5.7 Geotechnical data

5.7.1 *Introduction*

Laboratory test results are contained in Appendix C with in situ test results shown on the relevant exploratory hole log or datasheet in Appendix B. The following sections summarise the main findings and provide interpretation where appropriate.

5.7.2 *Plasticity*

The volume change potentials in terms of BRE Digest 298 with respect to building near trees have been determined from the results of plasticity index tests on samples of soil. These are summarised in Table 5-7.

Table 5-7: Volume change potential

Stratum	No. of tests	Plasticity Index			Modified Plasticity Index			Plasticity designation	Volume Change Potential
		Min.	Max.	Av.	Min.	Max.	Av.		
Made Ground	4	21	35	27.5	19.7	29.1	24.8	Intermediate to high	Low to medium
Natural-Pond Infill	2	22	49	35.5	21.8	48.0	34.9	Intermediate and extremely high	Medium to high
Head Deposits	19	17	25	21	16.8	24.0	20.1	Low to intermediate	Low to medium
Glacial Till	14	19	30	21.9	17.1	29.7	21.0	Intermediate	Low to medium

5.7.3 *Particle size distribution*

Particle Size Distribution test (PSDs) results are summarised in Table 5-8 and summary descriptions and PSD plots of the material analysed are presented in Appendix C.

Table 5-8: PSD results summary

Stratum	No. of tests	Silt/Clay %	Sand %	Gravel %	General description
Head Deposits	6 1 1	55-82 45 97	15-34 54 3	2-11 1 0	Slightly sandy slightly gravelly CLAY. Slightly gravelly very clayey SAND. Silty CLAY.
Glacial Till	4	78-81	15-18	2-5	Slightly sandy slightly gravelly CLAY.

5.7.4 *Soil strength*

Table 5.9 summarises information pertaining to the shear strength of the soils according to geological stratum. Factual results are summarised for laboratory tests, field tests (e.g., hand shear vane) and uncorrected Standard Penetration Tests (SPT). Where the SPT is used to infer shear strength by published correlation, this is also tabulated. A shear strength versus depth profile is summarised in Figure 5.1, and plots are presented in Appendix C.

Table 5-9: Soil strength results and derived values

Stratum	No. of tests	SPT (N-value) (range)	cu (kPa)	c' (kPa)	Method
Head Deposits	79	5 - 23	25 - 115*	26	SPT – cable percussion.
	59	6 - 50	30 - 250*		SPT – windowless sampler boreholes.
	8	-	39 - 114		Hand shear vane
	15	-	54 - 222		Laboratory triaxial test**
Glacial Till	28	5-50	25-250	26	SPT – cable percussion.
	52	8-27	35-135		SPT – windowless sampler boreholes.
	3	-	89-116		Hand shear vane
	11	-	21-183		Laboratory triaxial test**
Natural- Pond Infill	1	0	0*	23	SPT – windowless sampler boreholes.

*Correlation with Stroud and Butler (1975) based on 'average' plasticity.

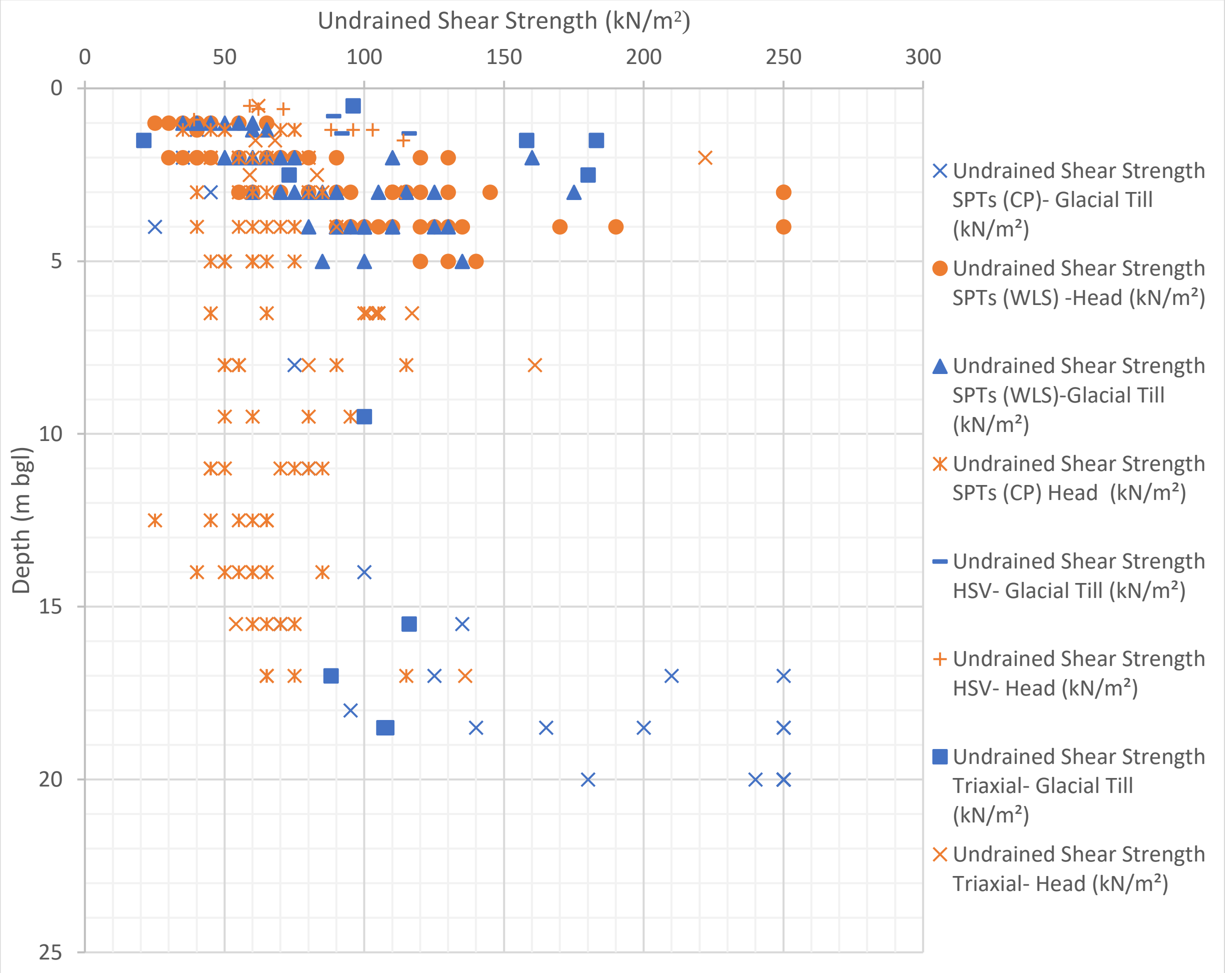

Figure 5.1: Undrained shear strength versus depth summary

As shown by Figure 5.1, the undrained shear strength of the Head Deposits within the top 5.00m ranges from 30 to 100kN/m² with some values greater than 100kN/m². Between 5.00m and 17.00m bgl the undrained shear strength in the Head Deposits is 50 to 85kN/m² with some values between 11.00m and 14.00m bgl of <50 kN/m². The data shows that the deeper Head deposits between 5.00m and 17.00m bgl are predominantly firm in consistency.

Where shallow Glacial Till deposits were encountered predominantly to the north and southern extents of the Head Deposits, between 1.20m and 5.00m bgl the undrained shear strength ranges from 50 to 135 kN/m². The deeper Glacial Till below the Head Deposits at circa 15.50m to 20.00m bgl had an undrained shear strength of between 88 and 250kN/m², showing a stiff to very stiff consistency.

5.7.5 *Relative density*

Table 5-10 summarises information pertaining to the relative density of the granular soils according to geological stratum. Factual results are summarised for laboratory tests, field tests (e.g., SPT correlation). A SPT 'N' value versus depth profile is summarised in Figure 5.2. Plots are presented in Appendix C.

Table 5-10: Relative density results and derived values

Stratum	No. of tests	Method	SPT (N-value) (Range)	phi' (°)
Head	9	SPT – cable percussion (Peck et. al. (1967).	1 -16	28-33
	7	SPT – windowless sampler boreholes (Peck et. al. (1967).	8-19	30-33
Glacial Till	1	SPT – windowless sampler boreholes (Peck et. al. (1967).	13	31

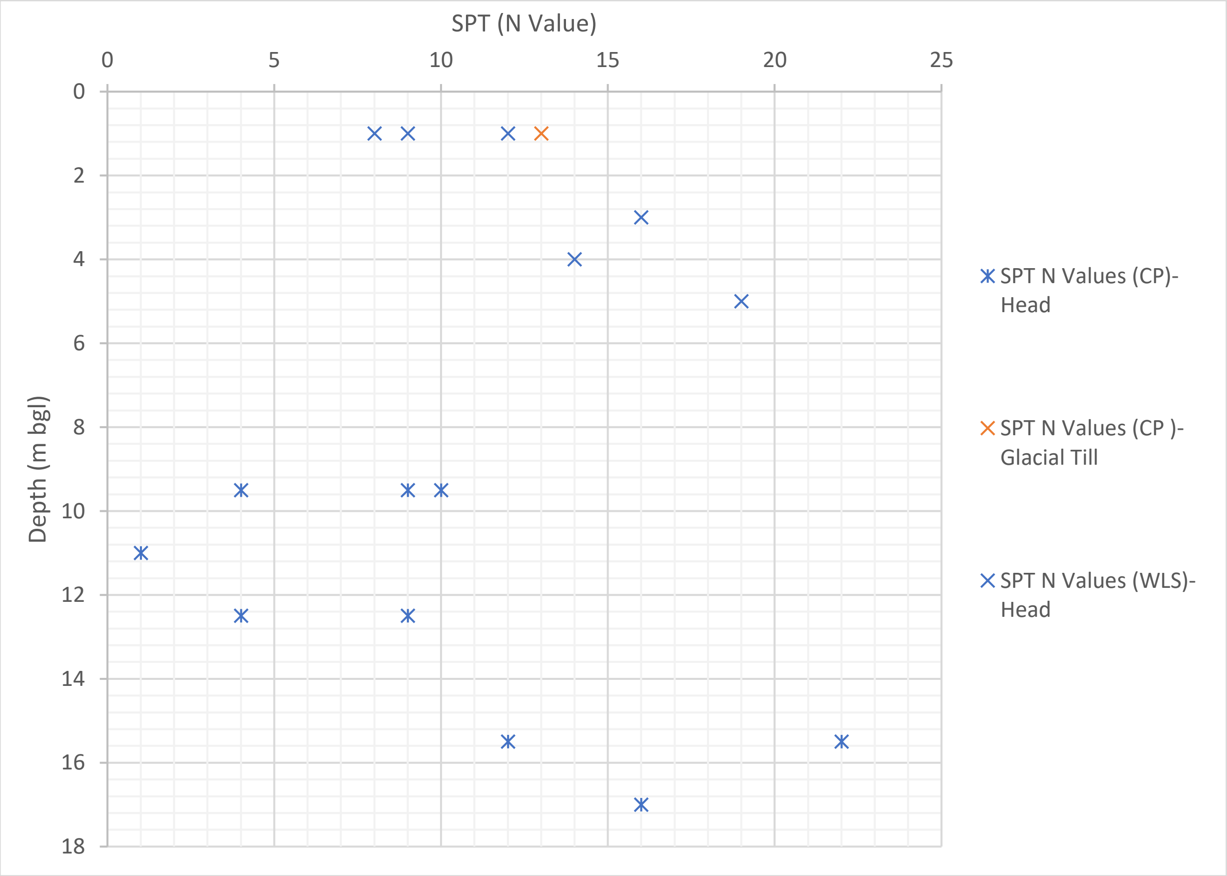

Figure 5.2: SPT 'N' Value versus depth summary

The N-values obtained in the shallow Head Deposits comprising bands of sand within the cohesive soils ranged from 8 to 19 between 1.20m and 5.00m bgl. These shallow granular deposits within the Head Deposits are of loose to medium density. Between 9.50m and 12.50m bgl, the granular deposits within the Head Deposits yielded N Values in the order of 1 to 10 showing there are very-loose to loose in density. The deeper granular deposits within the Head generally were interbedded with silts prior to encountering the deeper stiffer cohesive Glacial Till.

One SPT within localised granular deposits in the Glacial Till at 1.20m bgl had an N Value of 13 and is therefore of a medium density.

5.7.6 *Compressibility*

Table 5-11 presents a summary of the derived parameters for coefficient of consolidation and compressibility. The data indicates that the material is generally of medium to high compressibility over the pressure ranges tested.

Table 5-11: Summary of compressibility

Stratum	No. of tests / results	Method	Pressure range (kN/m²)	Coefficient of volume compressibility (mv) (m²/MN)	Coefficient of consolidation (Cv) (m²/yr)
Head	138	Correlation with SPT*	-	0.40 - 0.09	-
	5	One Dimensional Oedometer Testing	0 – 35	0.60 - 0.15	38.2 - 5.6
			35 - 70	0.39 - 0.20	13.9 - 3.3
			60 - 140	0.34 - 0.12	13 – 2.5
			140 - 280	0.14 - 0.12	7.3 - 2.7
			240- 320	0.15 - 0.09	12 - 1.9
			Unload	0.08 - 0.01	-
Made Ground	1	One Dimensional Oedometer Testing	0 - 35	1.47	1.2
			35 - 70	0.59	1.8
			70 - 140	0.39	2.5
			140 -280	0.24	2.4
			Unload	0.10	4.7
Glacial Till	80	Correlation with SPT*	-	0.40 - 0.07	-
	3	One Dimensional Oedometer Testing	0 – 55	0.29 - 0.11	39.5- 22.1
			55 - 110	0.24 -0.17	18.1 - 4.7
			110 -280	0.13 - 0.11	4.2 - 2.3
			220 - 440	0.09 - 0.07	3.9 - 1.8
			Unload	0.04 - 0.03	-
Natural Pond Infill	1	Correlation with SPT*	-	2	-

* An f2 value of 0.50 has been used based on a plasticity index of 21. (Tomlinson (2001), after Stroud, 1974)).

5.7.7 *Compaction and moisture content*

Table 5-12 presents a summary of the moisture content tests and compaction studies undertaken at the site.

Table 5-12: Compaction study results

Stratum	No. tests	Method	Natural moisture content (%) (range)	Optimum moisture content (%) (range)	Particle density (Mg/m³) (range)	Maximum dry density (Mg/m³) (range)
Head	3	2.5kg Rammer	20 - 23	17 - 20	2.65 - 2.7*	1.69 - 1.8
Glacial Till	1		20	17	2.65*	1.76
Made Ground	1		26	20	2.6	1.63

* Assumed

5.7.8 *Subgrade stiffness*

The subgrade stiffness (CBR and Modulus of Subgrade Reaction) results are summarised in Table 5-13.

Table 5-13: CBR results and derived values

Stratum	No. tests	Method	Subgrade Surface Modulus (MPa)	CBR (%) (Range)
Head Deposits	7	LWD Deflectometer Testing	12.9 - 26.1	0.6 - 1.9
Glacial Till	10	LWD Deflectometer Testing	17.3 - 30.0	1.0 - 2.3
Made Ground	7	LWD Deflectometer Testing	22.6 - 49.5	1.5 - 5.0
Head Deposits	1	Laboratory remoulded sample at Natural Moisture Content (NMC)	42.8*	3.8
Made Ground	3	Laboratory remoulded sample at Natural Moisture Content (NMC)	25.9 - 97.9*	2.3 - 8.7
* Subgrade Surface Modulus (E) is calculated using guidance in LR113 (1984) and CD225 Rev 1 (2009). Equation for conversion is 17.6(CBR)0.64				

5.7.9 *Sulphate content*

In accordance with BRE (Special Digest 1), the Design Sulphate (DS) classification and the Aggressive Chemical Environment for Concrete (ACEC) classification are presented in Table 5-14. The assessment summary sheets are presented in Appendix C.

Table 5-14: Aggressive chemical environment concrete classification

Stratum	No. tests	DS	ACEC
Made Ground	3	DS-1	AC-1
Head Deposits	4	DS-2	AC-2
Singleton Mudstone Member	1	DS-1	AC-1*

5.7.10 *Organic Matter Content*

One organic matter was undertaken on Made Ground- Pond Infill and Natural- Pond Infill from WS102 at 1.65m and 2.00m bgl. Both soil types contained an organic matter content of 1.2%.

5.7.11 *Intact material strength – rock*

Table 5-15 summarises information pertaining to the strength of the intact rock material (not rock mass) according to geological stratum and, if applicable, weathering zones or other variations within particular strata.

Factual results are summarised for laboratory and field tests. Where point load index tests are used to infer unconfined compressive strength (UCS), this is also tabulated. Rock strength terms follow the method of BS EN ISO 14689-1:2003.

Care should be exercised in using these assumed rock strength parameters for any purpose beyond the scope of this report because it may be that additional sampling and testing is required for certain purposes. The reader should refer to the original test results in Appendix C. Note also that rock mass properties, rather than intact rock material properties, may be more suitable for design purposes.

Table 5-15: Intact rock strength results and derived values

Stratum	No. of tests	Point load index (Range)		UCS (MPa) (range)	Method
		Is	$Is_{(50)}$		
Singleton Mudstone Member	8	0.03-0.22	0.03-0.22	0.63-4.62	Axial point load
*a conversion factor of 21 has been used to convert $Is_{(50)}$ to UCS (Rusnak and Mark, 2000)					

6. GEOTECHNICAL ASSESSMENT

6.1 Geotechnical categorization of the proposed development

Eurocode 7, Section 2 advocates the use of geotechnical categorization of the proposed structures to establish the design requirements.

Hydrock has been provided with a development layout for the new prison (drawing reference 608623-0000-PEV-GHX0011-ZZ-DR-A-9100-P06), which comprises a number of different structures as summarised in Table 6-1.

Table 6-1: Summary of Proposed Structures

Structure Description	Construction Detail	Preliminary Geotechnical Design Category	Further Geotechnical Design Required
House Blocks 01 - 07	4-storey precast concrete	CAT 2	✓
Workshop	Portal frame with partial mezzanine	CAT 2	✓
Support and Kitchen Buildings	2-storey portal frame	CAT 2	✓
CASU	2-storey precast concrete	CAT 2	✓
Boiler House	Portal frame or prefabricated unit	CAT 1	
Central Services Hub (CSH)	2-storey steel frame	CAT 2	✓
Entrance Resource Hub (ERH)	2-storey steel frame/precast concrete	CAT 2	✓
Electrical Sub Stations (5 No.)	Not stated. Assume small brick or prefabricated structures	CAT 1	

The preliminary geotechnical categorisation stated in Table 6-1 should be re-assessed at the design stage for each structure. Where a structure or part of a structure is determined to be geotechnical category 2 (or 3) then detailed geotechnical design is required in accordance with EC7. This should include verification of all relevant limit states based on the permanent and variable actions with the results presented as part of a Geotechnical Design Report (GDR).

Following the ground investigation and as part of the assessment provided in the following section, the preliminary geotechnical hazard identification undertaken in Section 3.3 has been updated.

Assessment has been undertaken in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The Geotechnical Risk Register following investigation is provided in Appendix G (Table J.3) and will need to be updated during future geotechnical design works.

6.2 Characteristic design values (electrical sub stations)

For design of Category 1 structures in accordance with BS EN ISO 1997-1 (EC 7), the geotechnical parameters given in Table 6-2 can be used for design.

These values have been determined from laboratory testing, in situ testing and by professional judgement using published data together with knowledge and experience of the ground conditions. Care should be exercised in using these assumed soil strength parameters for any purpose beyond the scope of this report because it may be that additional sampling and testing is required for certain purposes. The reader should refer to the original test results summarised in Section 5 and provided in Appendix B and Appendix C.

Table 6-2: Geotechnical parameters recommended for design of Geotechnical Category 1 Structures (EC7)

Parameter Stratum	Bulk unit weight kN/m³	Effective angle of internal friction °	Effective cohesion kN/m²	Undrained shear strength kN/m²	Coefficient of compressibility m²/MN	Subgrade Surface Modulus MN/m²
	γ [a]	ϕ' [b c]	c' [d]	c_u [e]	m_v [f]	k [g]
Head 1.20 to 2.00m	21.5	26	0	40	0.25	20
Glacial Till 1.00 to 2.00m	21.0	26	0	40	0.25	25

a. Measured as part of the triaxial strength test and estimated based on the recommendations of BS 8004-2015.

b. Internal friction (φ’) values for the granular in situ material derived from SPT data following the recommendations of Peck et al., (1967).

c. Internal friction (φ’) values for the cohesive in-situ material derived from BS 8004-2015, where φcv’ is derived from plasticity index. The use of φcv’ in the analysis is considered to provide a conservative estimate of φ’.

d. BS 8002:1994 Code of practice for Earth retaining structures, British Standards institution.

e. Site measurements and laboratory data.

f. Laboratory data.

g. calculated using guidance in LR113 (1984) and CD225 Rev 1 (2009). Equation for conversion is 17.6(CBR)0.64

In accordance with BS EN ISO 1997-1 (EC 7), Hydrock consider the majority of the proposed structures would be classified as Category 2 structures. As part of the separate geotechnical design, the designer should determine the geotechnical design values based on the data presented in this report.

6.3 Groundwork

6.3.1 *Site preparation*

The redevelopment will involve demolition of the existing buildings. This should be undertaken to an appropriate Specification to ensure any asset materials generated are processed and geotechnically suitable for reuse.

Buried obstructions were encountered during this investigation associated with foundations of former buildings, and there is a possibility of further such obstructions being encountered.

Topsoil should be removed from beneath all building and hardstanding areas.

6.3.2 *Groundworks*

There is a pond present in the north west of site and as part of the proposed development this pond will be backfilled. There is a backfilled pond present in the north east of the site located in WS102. Soft compressible soils in the base of the pond will require over-excavation. The sides of the excavation should also be benched prior to infilling. The void remaining should be backfilled with a geotechnically suitable material, which is either site-won or imported. Should the existing pond location fall below a proposed structure foundations will be required to extend below the base of the former pond into competent soils. The treatment of former infilled ponds and existing ponds should be undertaken in accordance with an earthworks specification this should be covered within a separate Geotechnical Design Report.

Following breaking out of hardstanding and obstructions, excavation of shallow soils should be readily undertaken by conventional plant and equipment. However, excavation through any buried construction may require heavy-duty excavation plant and the use of specialist breaking equipment.

Trial pit faces were noted to remain generally vertical without collapse. The faces of shallow, near vertically sided excavations put down at the site are likely to remain stable for only short periods of time.

Temporary trench support, or battering of excavation sides, is recommended for all excavations that are to be left open for any length of time and will definitely be required where man entry is required. Particular attention should be paid to excavation at, or close to, existing buildings, site boundaries and the existing prison perimeter fence, where collapse of excavation faces could have a disproportionate effect.

A risk assessment of the stability of any open excavation should be undertaken by a competent person and appropriate measures adopted to ensure safe working practise in and around open excavations. Further guidance on responsibilities and requirements for working near, and in, excavations can be obtained from the Construction Design and Management Regulations (2015); Construction Information Sheet 47: Inspections and Reports (2005) and HSG47: Avoiding Danger from Underground Services.

To ensure no loads are imposed on the sides of the excavation, spoil should not be placed immediately adjacent to the excavation. Spoil should be placed a suitable distance from the side of the excavation (as assessed by a competent person).

Based on site observations, the rate of water ingress to the proposed excavations is likely to be slow. In these circumstances, groundwater control by sump pumping is likely to be sufficient.

However, it should be recognised that groundwater levels may vary from those at the time of the investigation, for example in response to seasonal fluctuations and the timing of construction may dictate the extent of groundwater control required.

Any water pumped from excavations may need to be passed via settlement tanks (to reduce suspended solids) before being discharged to the sewer. Discharge consents may also be required.

6.3.3 Earthworks/reuse of site-won materials

Whilst Hydrock has not been provided with the specific requirements for earthworks (cut / fill depths and volumes), it is understood earthworks may be required to form flat development platforms for the proposed new buildings. An initial assessment has been completed on the potential to reuse site-won materials as a General Fill material. This is summarised in Table 5.3.

The classification of materials depends on both the proposed end use and whether the material will meet the performance requirements of that end use. Based on Hydrock's understanding, the following assessment is based on General Fill.

An initial assessment of classification data (see Section 5.7 and Appendix C) has been completed based on Hydrock's understanding of the development and the potential to reuse site-won materials as an engineered fill material. This is summarised in Table 5.3.

Table 6-3: Preliminary earthworks assessment

Stratum	Proposed end use	Preliminary classification (SHW Series 600)	Comment	Suitability for improvement by the inclusion of binders
Made Ground	External Areas	Class 1 General Fill	Processing to remove oversize and deleterious material required.	Total potential sulphate in the order of 0.1 and 0.4%, may be suitable subject to further detailed design and testing.
Topsoil	Open Space	Class 4 (Landscape Fill)	Unsuitable for General Fill due to high organic content. Can only be used in areas which are not sensitive to settlement.	Unlikely to be suitable
Head Deposits	External Areas	Class 2A 2B General Fill	3-4% Wet of optimum, moisture conditioning (e.g., lime modification) likely to be required.	Total potential sulphate in the order of 0.2 and 0.4%, may be suitable subject to further detailed design and testing.
Glacial Till	External Areas	Class 2A 2B General Fill	3% Wet of optimum, moisture conditioning (e.g., lime modification) likely to be required.	Likely to be suitable.

The earthworks may need to be undertaken under a Materials Management Plan (see Section 8.3).

Before the use of hydraulic binders can be approved, comprehensive testing will need to be completed by a specialist Contractor to satisfy both themselves and the Engineer of the suitability of the soils for treatment and to confirm that the requisite end-performance of the material is achievable. In all instances where improvement by the inclusion of binders is considered, a mix design is required and as part of this design, samples should be checked for swelling, even where very low sulphate values are recorded.

Where it is proposed to reuse site-won materials as an engineered fill, it will be necessary to develop an appropriate Site-Specific Earthworks Specification. The basis for the Specification should be BS 6031:2009 and the latest version of the SHW, Series 600 Earthworks. Once site proposals have been further defined more specific consideration will need to be given to the reuse of materials and reference should be made back to Hydrock.

6.4 Foundation recommendations

In accordance with EC7, BS EN 1997-1+A1 (2013), the majority of the proposed structures including the four-storey house blocks are considered to be Geotechnical Category 2 and small light-weight structures such as the electrical sub stations can initially be considered as Geotechnical Category 1. As such, for Category 2 structures foundation recommendations are presented to aid development proposals only and separate detailed geotechnical design will be required. This separate geotechnical design should be undertaken in accordance with EC7, which requires each of the relevant limit states to be verified based on the calculated permanent and variable actions.

In general, the ground conditions across the site comprise the following:

- Made Ground up to approximately 1.0m bgl; over
- Firm and firm to stiff cohesive Head Deposits to approximately 10m bgl; over
- A zone of soft and loose cohesive and granular Head Deposits up to 5.0m thick extending to up to 15.0m bgl; over
- Firm to stiff cohesive Head Deposits to approximately 18.0m bgl: over
- Stiff to very stiff Glacial Till to approximately 24m bgl: over
- Very weak Mudstone.

The Head Deposits and Glacial Till are off medium volume change potential. Therefore, foundations will need to be appropriately designed to mitigate heave in the underlying soils where trees are removed. This may require deepening below the zone of tree influence and the installation of heave precautions and additional reinforcement. Furthermore, the foundation design is also to consider trees that remain in place and any proposed new planting within the influencing distance of structures.

In general, to support the heavier loaded four-storey prison units there may be a requirement to extend foundations below the variable Head deposits including the low strength zone at approximately 10m bgl.

Lighter bearing units may be founded within the firm to stiff shallow cohesive soils of the Head Deposits or Glacial Till subject to a foundation depth due to tree influence assessment and detailed geotechnical assessment.

Locally in the north west, deep Made Ground is present in close proximity to the existing boiler house, foundations in proximity to this deep Made Ground will require extending below the Made Ground. Locally in the north east, Made Ground is present to circa 1.30m bgl, this is underlain by compressible peaty clay to 3.20m bgl. These soils are associated with a backfilled former pond and require removal of the soft compressible soils in accordance with an earthworks specification and replacement with an engineered fill material. A specific foundation design should be established for this part of the site in conjunction with the earthworks design where over-excavation is undertaken.

On the basis of the ground conditions indicated from the current and previous investigations, the foundations will likely comprise:

- Shallow strip or trench fill foundations for the low rise lightly loaded structures understood to include the;
    - Workshop
    - Support and Kitchen Buildings
    - CASU
    - Boiler House
    - Central Services Hub (CSH)
    - Entrance Resource Hub (ERH)
    - Electrical Sub Stations (5 No.)
- Piled foundations for the 4-storey house blocks.

6.4.1 *Strip / trench fill foundations*

Subject to detailed geotechnical design and verification of the actual load, the allowable bearing capacity stated in this report is based on a global factor of safety applied to the estimated ultimate bearing capacity designed to limit settlements to within normally tolerable limits.

Initial recommendations for shallow foundations are provided in Table 6-4 as a guide. Further geotechnical analysis, including the assessment of settlement, will be required as part of the foundation design in order to check the depth of influence based on the proposed foundation sizing.

Table 6-4: Recommendations for Shallow Foundations

Structure Description	Indicative foundation depth (m below current ground level) Not including deepening due to trees	Allowable Bearing capacity for strips up to 1.0m wide and pads up to 4m² (2m x 2m) (kN/m²)	Comments
Workshop, Support and Kitchen Buildings	1.50	100	Foundations to extend through any Made Ground.
CASU	1.50	80	Foundations to extend through any Made Ground. Reduced bearing capacity due to presence of loose gravel identified in WS103E.
Boiler House	1.50 – 2.00	80	Foundations to extend through any Made Ground. Increased foundation depth to account for Made Ground.
Central Services Hub (CSH)	1.00 – 1.50*	100	Foundations to extend through any Made Ground. Low strength organic deposits associated with the pond to 3.20 bgl requires over-excavation and replacement. Specific foundation design with additional reinforcing or designed to span fill.
Entrance Resource Hub (ERH)	1.50 – 2.00	100	Foundations to extend through any Made Ground.
Electrical Sub Stations (5 No.)	1.00	80 (50 for up to 1.5m wide)	Foundations to extend through any Made Ground.
*Following over-excavation and removal or organic deposits. Consider vibro-stone columns, where replaced by engineered fill, or piled foundations.			

For low-rise lightly loaded structures it is consider that an allowable bearing capacity of between 80kN/m² and 100kN/m² is suitable for outline design based on strip foundations up to 1.0m wide and pads up to 4m² (2m x 2m). Where higher foundation pressures are required, consideration could be given to vibro improvement of the Head Deposits.

If enlarging the foundations is considered (for example, because loads are such that the quoted bearing pressure is inadequate) this could lead to increased settlements and the above recommendations should be reviewed as part of the geotechnical design.

Based on the BRE Digest 240 (medium), the minimum founding depth for strip or trench fill foundations is 0.90m below final ground level, and to below the base of the Made Ground.

Where foundation depths are stepped, for instance, in trench fill and strip foundations to match changes in depths due to trees or ground conditions, the steps should be designed in accordance with the requirements of the NHBC Standards or other relevant standards.

If trees are to be removed, the roots should be grubbed out and foundations extended to below the zone of disturbance created by this activity and to below any remaining root hairs.

Deepening of foundations in accordance with NHBC Standards or other relevant standards will be required where foundations are within the zone of influence of existing, removed or proposed trees and proposed shrub planting. A tree survey should be undertaken by an arboriculturist in accordance with BS 5873:2012 to identify the type, and height of existing trees on the site and including any off-site trees, which could have an effect on foundation design.

Where trench fill foundations are within the zone of potential desiccation from trees and are deeper than 1.5m bgl, a suitable compressible material or void former will be required on the inside faces of foundations to external walls and beneath ground bearing floor slabs.

Foundation formations should be inspected by a geotechnical engineer or other suitably competent person to ensure the founding conditions are suitable and as indicated in this report. Any formation materials deemed as unsuitable should be excavated and replaced with lean mix concrete or deepened to suitable strata. If this is not possible, alternative solutions (such as piling) should be undertaken.

As the ground conditions at formation level are likely to be of variable type and stiffness, for the strip/trench fill foundations, it is recommended that foundation concrete should be reinforced with mesh, installed at the top and bottom of the foundation, across the zone of variable soil conditions.

Foundation excavations should be protected from rainfall, inflow of surface water, frost and freezing conditions. They should also be protected from drying out in hot dry weather.

Groundwater monitoring indicates the presence of a sporadic, low flow groundwater table. Any water that collects at the base of the foundation excavations should be removed by pumping from a sump in the base.

6.4.1.1 Vibro stone columns (VSC)

Treatment by vibro-replacement stone columns (VSC) at suitable spacing could lead to improvement of the shallow soils by the creation of stone columns, and also by the densification of the granular soil present in some parts of the site. The depth and spacing of the VSC treatment should be determined by a specialist Contractor.

Based on the results of the ground investigation the strength profile of the Head Deposits does not significantly increase with depth within the upper 15m and therefore treatment by VSC will likely be partial depth. Input from a specialist contractor will be required to confirm the potential increase in bearing capacity achieved by this technique.

Shrinkable soil reinforced with stone columns is still susceptible to volume change and foundations should be designed accordingly, particularly where they are in the zone of influence of existing or proposed trees.

VSC Contractors use different methods of emplacing the stone columns. Due to the presence of shallow groundwater, it is recommended that bottom feed VSC is used to reduce the risk of collapse of stone columns.

The VSCs should be designed by a specialist. In addition, Hydrock recommend a Specification for the use of VSCs is written in accordance with BRE 391.

6.4.2 Piled foundations

Piled foundations are recommended for the proposed heavier loaded 3 to 4-storey house block units.

Depending on column loads and layouts, piles should extend through the Made Ground, loose and soft Head Deposits to a suitable depth into the underlying stiff to very stiff Glacial Till or very weak Singleton Mudstone Member.

Pile design by specialist contractor should be undertaken based on the results of this ground investigation. For the purposes of outline design the following pile capacities in Table 6-5 can be used as a guide.

Table 6-5: Indicative Pile Capacity (Dirven and CFA round piles)

Pile Toe Depth (founding strata)	Allowable Load Q_a (kN) for different pile diameters		
	0.30m	0.45m	0.60m
15.00 (Head)	320	490	670
17.00 (Head)	360	555	755
19.00 (Till)	425	665	925
21.00 (Till)	465	730	1010
23.00 (Till)	505	790	1090

The values in Table 6-5 have been determined by permissible strength methods from the sum of the end resistance (Q_b) and skin friction (Q_s) divided by a factor of safety of 2.5 and included the following assumptions:

- Bearing capacity factor $N_c = 9$.
- Undrained shear strength at the base $c_{ub} = 60$kPa (Head Deposits) or 150kPa (Glacial Till).
- Adhesion Factor $F\alpha_p = 0.9$.
- Average undrained shear strength over length of pile $c_u = 60$kPa.
- Negative skin friction not included.

Higher pile capacities can be obtained by end bearing within the mudstone at depths greater than 24m.

CFA piles should be suitable to support the foundations for the structures. However, the choice of piling system should be undertaken by a specialist piling Contractor and the design of piles is beyond the scope of this report. The decision on pile type and design should take into account the following factors relevant to the site:

- Obstructions in the ground are expected from the previous buildings onsite, which could cause piles to stop shallower than the design depths, or to deviate from the vertical, thereby reducing their capacity. In some circumstances, obstructions can lead to pile breakage.
- Pile installation can create preferential pathways for the migration of contaminants to the groundwater.

- Boring of piles through coarse soils can result in loosening of the material, with resultant risk of shaft collapse prior to concreting and reduced shaft friction.
- Groundwater levels within the deeper Head Deposits are in the order of 8.70m and 12.50m bgl under sub-artesian pressures rising up to 4.00m and 5.00m bgl and temporary casing is likely to be required to depths of approximately 13.00m bgl for bored piles. If CFA piles are used, concrete is placed as the auger is withdrawn, which can balance the water pressure if the operation is undertaken carefully.
- The groundwater in the Head, is under sub-artesian pressure, which should be taken into account in the pile design.
- Piles extending through Made Ground, engineered fill or in proximity to the former pond may be constructed through compressible soils, and piles should be designed to cater for the potential down-drag effects of negative skin friction on piles.
- Where bored piles extend through very soft ground, bulging of the concrete can occur, leading to lateral pressure on adjacent piles.
- Where foundations are constructed on clay soils within the influencing distance of trees design should include for the upper section of the pile to be sleeved or additional length allowed for to resist stresses from clay swelling or shrinkage. In addition, heave protection may be required on the inside faces and underside of the ground beams.

The pile design should be undertaken by a specialist based on loading criteria and the serviceability limit states provided by the structural engineer.

6.4.3 Foundation works risk assessment

As there is a low risk to Controlled Waters, Hydrock believes that a foundation works risk assessment is not required as the proposed piling, will not result in a significant increase in risk of pollution to Controlled Waters.

6.4.4 Working platform

For piling, a working platform will be required prior to the arrival on site of tracked plant. This should be designed and installed in accordance with BR470 (BRE 2004) based on data on the piling plant in accordance with an FPS certificate for the rig loadings.

6.5 Ground floor slabs

In accordance with the relevant standards, as clay soils of medium volume change potential are present at the site, it is recommended that suspended floor slabs with a void be adopted.

Slabs without a void (ground bearing or suspended cast in situ onto the ground) may be used if all of the following criteria are satisfied:

- the load on the floor slab does not cause excessive settlement;
- the foundation depth (such as due to the influence of trees) is less than 1.5m;
- any fill is suitable, well-compacted granular material and less than 600mm thick;
- it is demonstrated that the soils are not desiccated and are at their equilibrium moisture content; and

- ground floor construction is not undertaken when the surface soils are seasonally desiccated (i.e., during summer and autumn).

6.6 Roads and pavements

Where the CBR is found to be less than 2.5%, the sub-grade may be unsuitable for both the trafficking of site plant and as support for a permanent foundation, without improvement works being undertaken. Improvement works should be carried out in accordance with a site-specific design. In summary, consideration may be given to the following potential remedial techniques:

- excavation and re-engineering or replacement of weaker soils;
- the inclusion of geosynthetic reinforcement within the unbound layers of the capping and sub-grade;
- where cohesive soils are present and they are deemed suitable for treatment with hydraulic binders, to employ modification and/or stabilisation techniques on the formation; and
- where granular soils are present, de-watering and re-engineering the formation.

6.7 Drainage

Indicative infiltration rates for the ground investigation are presented in Appendix C and are summarised in Table 5-5.

Soakaways are considered unsuitable for the site based on the low infiltration rates obtained from testing. However, the infiltration rates recorded may assist with attenuation as part of a Sustainable Urban Drainage System (SUDS).

6.8 Buried concrete

Based on guidelines provided in BRE Special Digest 1 (BRE 2005) and the information presented in Section 5.7.9 (Table 5-14):

- The Made Ground can be classified as Design Sulphate Class DS-1 and ACEC Class AC-1.
- The Head deposits can be classified as Design Sulphate Class DS-2 and ACEC Class AC-2.
- The Singleton Mudstone Member can be classified as Design Sulphate Class DS-1 and ACEC Class AC-1*.

The designer should check and confirm the classification of concrete using the information presented in Appendix B and Appendix C during the design.

7. GEO-ENVIRONMENTAL ASSESSMENT

7.1 Updated conceptual model

7.1.1 Updated ground model

The preliminary ground model developed from the desk study review Section 2 has been updated using the findings of the ground investigation and is presented in Section 5. This ground model is the basis for the geo-environmental assessment presented in this section.

7.1.2 Updated exposure model

Following the ground investigation, the plausible contaminant sources, receptors and pathways identified in the preliminary geo-environmental exposure model (Section 2), have been updated or confirmed as follows.

7.1.2.1 Sources

The following potential source has been removed from the exposure model.

- Various contaminants associated with possible historical MOD rail tracks and explosive store on site including heavy metals, volatile or semi volatile organic compounds - *no volatile organic or semi volatile organic compound were found above the limited of laboratory detection. There were no visual or olfactory evidence for solvent contamination and PID reading were <1ppm.*
- Hydrocarbon vapours from potential VOC and petroleum hydrocarbon spillages/leaks- *no obvious visual or olfactory evidence of hydrocarbon or VOC impact recorded during the ground investigation. The PID readings undertaken on various samples of Made Ground and natural soils were <1ppm.*

7.1.2.2 Receptors

No potential receptors have been removed from the exposure model.

7.1.2.3 Pathways

The following potential pathway has been removed from the exposure model.

- Migration of contaminants via leachate migration through the unsaturated zone in the Head or Glacial Till- *the ground investigation proved up to 20.45m of low permeability Head deposits or Glacial Till as such there is not considered to be a viable pathway.*
- Migration of contaminants from the groundwater within the Made Ground/ Head or Glacial Till to the groundwater within the Singleton Mudstone aquifer- *the ground investigation proved up to 20.45m of low permeability Head deposits or Glacial Till as such there is not considered to be a viable pathway. The Singleton Mudstone Member is considered to be an unproductive aquifer and therefore future groundwater abstraction is not considered viable.*

Using the updated ground model and updated exposure model, generic risk assessment is undertaken as presented below.

7.2 Risk assessment approach

Generic risk assessments have been undertaken in accordance with the principles of LCRM (Environment Agency, 2019) using the CM that has been updated following the ground investigation.

Firstly, the risks associated with the identified potential contaminant linkages have been estimated using standardised methods (typically involving comparison of site data with published ‘screening values’). Secondly, where screening values are exceeded, the result has been evaluated in an authoritative review of the findings with other pertinent information to determine whether or not the exceedance is, or is not acceptable in the site-specific circumstances. Further explanation is presented in Appendix I.

The data sets used in the assessment comprise the analytical results obtained by Hydrock and E3P investigations as listed in Section 4.

In cases where unacceptable risks are indicated, actions such as more advanced stages of risk assessment or remediation are proposed in Section 7.10.

7.3 Human health risk assessment

This is a Tier 2 assessment using soil screening values applicable to the residential without plant uptake, CLEA land use scenario.

There are no soil screening values for use in assessing the prison land use and in this instance a conservative screening option has been adopted by using the residential without plant uptake scenario.

The soil screening values used are generic assessment criteria (GAC). It should be noted that Category 4 Screening Levels (C4SL) for lead have been used as there is no recognised GAC for lead and the use of the term ‘GAC’ in this report includes the C4SL for lead.

Statistical testing is used where data sets are suitable. The critical issue is sample numbers. For data sets with low sample numbers and where sampling is targeted at specific areas, individual sample test results are compared directly with the screening values. Larger and non-targeted data sets are subject to statistical testing.

The phrase ‘further assessment required’ is used to denote soil concentrations that are equal to, or exceed, a GAC. This does not necessarily mean that the soil is ‘contaminated’ or not otherwise suitable for use. The assessment and any mitigation required are to ensure the site does not pose an ‘unacceptable risk’.

The results of the assessment are presented in Appendix E.

7.3.1 Averaging areas

The ‘averaging areas’ used in this report are based on the conceptual model and the proposed development, and are summarised as:

- ‘General’ Made Ground;
- PAH Hotspots;
- Topsoil; and
- Natural Soils.

7.3.2 Risk estimation (without statistical testing)

7.3.2.1 Hydrock default list of determinands

Based on individual test results that exceed the GAC, the chemicals of potential concern which require further assessment are summarised in Table 7-1.

Table 7-1: Chemicals of potential concern for which further assessment is required (human health)

Chemical of potential concern	Generic criterion (mg/kg)	Basis for generic criterion	No. samples	Min. (mg/kg)	Max. (mg/kg)	No. samples exceeding generic criterion
PAH Hotspots						
Benzo(a)anthracene	7.8	GAC	4	2.6	45	1
Benzo (a)pyrene	1.6	GAC	4	5.5	70	4
Benzo(k)fluoranthene	16	GAC		1.6	26	1
Chrysene	16	GAC		2	36	1
Dibenz (a, h) anthracene	1.4	GAC		0.37	7	1
Indeno (1,2,3, cd) pyrene	6.6	GAC		1.5	26	1
'General' Made Ground						
No Exceedances						
Topsoil						
No Exceedances						
Natural						
No Exceedances						

The presence of benzo(a)pyrene in CBR101, WS118E and WS123E and presence of significant PAH elevations within WS111E requires further consideration.

The locations of the PAH hotspots are shown on the Hotspots Plan (Hydrock Drawing 19851-HYD-XX-XX-DR-GE-0008) in Appendix B.

7.3.2.2 Asbestos

There is visual evidence of Asbestos Containing Materials (ACM) in a number of exploratory hole locations. These locations are summarised in Table 7-2. Of the 19 samples tested for non-visible trace asbestos loose fibres there were no positive results.

Table 7-2: Visual evidence of Asbestos Containing Materials

Location	Depth (m bgl)	Comment
BH107a	0.30	Laboratory confirmed, Chrysotile- Hard/Cement Type Material
CBR 101	0.55	Laboratory confirmed, Chrysotile- Hard/Cement Type Material
CBR 109	0.20 - 0.35	Laboratory confirmed, Chrysotile- Hard/Cement Type Material

The locations of the visible asbestos encountered are shown on the Visible Asbestos Containing Materials Plan (Hydrock Drawing 19851-HYD-XX-XX-DR-GE-0006) in Appendix B.

The presence of Asbestos Containing Materials in soils and at the surface requires further consideration.

7.3.2.3 Petroleum hydrocarbons (PHC)

Targeted analysis of soils (based on visual / olfactory evidence of contamination) has identified petroleum hydrocarbons in soils at WS106E, WS111E and WSS18E, with exceedances of the following TPH fractions (TPH level 1 testing undertaken):

- WS106E 0.80m bgl: Aliphatic >EC8 – EC10 (70mg/kg vs a GAC of 65mg/kg);

- WS106E 0.80m bgl: Aliphatic and Aromatic >EC10 – EC12 (2700mg/kg vs a GAC of 120 and 590mg/kg);
- WS106E 0.80m bgl: Aliphatic and Aromatic >EC12 – EC16 (9400mg/kg vs a GAC of 59 and 2300mg/kg);
- WS106E 0.80m bgl: Aromatic >EC16 – EC21 (3400mg/kg vs a GAC of 1900mg/kg);
- WS106E 0.80m bgl: Aromatic >EC35 – EC44 (16000mg/kg vs a GAC of 1900mg/kg);
- WS111E 0.80m bgl: Aliphatic >EC12 – EC16 (170mg/kg vs a GAC of 59mg/kg);
- WS118E 0.80m bgl: Aliphatic >EC12 – EC16 (110mg/kg vs a GAC of 59mg/kg);

The elevation for Aliphatic >EC12-EC16 within WS111E and WS118E are considered marginal and within a hydrocarbon fraction that has a very low mobility within water and therefore are immobile.

The presence of petroleum hydrocarbons at WS106E (between 0.80m bgl and 1.00m bgl) requires further consideration.

7.3.2.4 Benzene, Toluene, Ethylbenzene and Xylene (BTEX) and Methyl Tertiary Butyl Ether (MTBE)

All BTEX and MTBE were found to be below the laboratory limit of detection. No further consideration is required.

7.3.2.5 Volatile organic compounds (VOC) and Semi Volatile organic compounds (SVOC) – soils

There were no elevated concentrations of VOCs or SVOCs within the soils, they were below the laboratory limit of detection.

7.3.3 Risk evaluation

The screening exercise has identified visual asbestos containing materials, hotspots of PAHs and a hotspot for petroleum hydrocarbons in Made Ground at concentrations above the GAC. These are considered further here to assess if the exceedance may be acceptable with respect to the proposed development. The phrase ‘further assessment’ does not necessarily mean that the soil is ‘contaminated’ or not fit for use.

7.3.3.1 Asbestos

There were exploratory hole locations where Asbestos Containing Materials are present in the form of laboratory confirmed Chrysotile Hard/Cement type asbestos either within the Made Ground or upon the surface locally.

Hydrock consider it plausible for asbestos to be present in any of the Made Ground soils and asbestos, (even at low concentrations), represents an unacceptable risk and mitigation measures will be required in this area of the site.

7.3.3.2 Benzo(a)pyrene in Made Ground

Benzo(a)pyrene is present in the Made Ground with GACs between 2.8 and 70mg/kg, which is a significant exceedance of the GAC (1.6mg/kg). These significant exceedances are considered to be an unacceptable risk, which requires mitigation for the proposed end use.

7.3.3.3 PAHs at WS111E in the Made Ground

Significant concentrations of PAHs were encountered within the Made Ground in WS111E at 0.20m bgl. These significant exceedances are considered to be an unacceptable risk, which require mitigation for the proposed end use.

7.3.3.4 Petroleum hydrocarbons

One hotspot of petroleum hydrocarbons has been identified, at WS106E between 0.80m bgl and 1.00m bgl. This presents a potentially unacceptable risk and requires mitigation. The hotspot is present within an organic material that is unlikely to be geotechnically suitable to remain below the proposed road which will transect through this area.

7.4 Plant life risk assessment

7.4.1 Risk estimation and evaluation

Priority phytotoxic chemical concentrations have been screened against published values to determine the likely risk to plant growth and the findings presented in Appendix E. As with human health, statistical testing is used where data sets are suitable, otherwise individual sample test results are compared directly with the screening values.

Within the soils, there were no elevated concentrations for determinands that cause potential concern to plant life when compared to the GAC. Hydrock does not believe there to be an unacceptable risk to plant life from contamination within the likely reused topsoil or natural subsoils present onsite and no additional consideration is required with regard to risks to plant life.

7.5 Pollution of controlled waters risk assessment

7.5.1 Risk estimation

The risks to groundwater and surface water from contaminants on site have been assessed in accordance with the Environment Agency (2006) Remedial Targets Methodology (RTM).

Site contaminant loadings are compared with relevant screening values (Water Quality Targets), which are linked to the Conceptual Model.

Acceptable WQT are defined for protection of human health (based on Drinking Water Standards (DWS)) and for protection of aquatic ecosystems (Environmental Quality Standards (EQS)).

As related specifically to this site, the data are compared with criteria selected in accordance with the methodology presented in Appendix I. This methodology involves selecting which of several alternative risk scenarios apply in this case. The assessment is presented in Table 7-3 below, with the justification for the scenarios selected explained in the following text:

- The site does not lie within a groundwater source protection zone and there are no groundwater abstraction wells within 1km of the site boundary;
- Although the Head deposits are classified as a Secondary A aquifer the productive horizon within the Head across the site appears to be a layer of sand encountered at 9.20m bgl. The ground investigation confirmed that across the site there is between 8.80m and 14.85m of low permeability clays between the Made Ground and the productive sand horizon. Therefore, there is not

considered to be a viable pathway for shallow groundwater or leachable contaminants to reach the deeper sand within the Head.

- The Singleton Mudstone Member is classified as a Secondary B aquifer which produces very low yields of groundwater due to its inherent low permeability clays/mudstone or siltstones so future abstraction from the Mudstone member is considered unlikely.
- A large fishing pond is present in the northeast of site, with a second smaller pond present in the west. There are several drainage ditches running across the site. There are no other pertinent water features within 250m of site.
- Wymott Brook is situated 607m west of the site boundary. Groundwater appears to be flowing west towards Wymott Brook suggesting hydraulic continuity with the Brook.

Table 7-3: Summary of water quality risk assessment protocol

Hydrock scenario	Water body receptors	Secondary receptors	Example contaminant linkages	RTM level and data used	Water quality targets
B	Groundwater. Leachate testing	Aquatic ecosystem.	Contaminants from site leach or seep into a groundwater body that feeds inland surface water by base flow. The surface water may be an aquatic ecosystem.	RTM Level 1 - Soil leachate/pore water/calculation. RTM Level 2 - Groundwater. Direct comparison of surface water samples	EQS (inland)
Notes: Some EQS are water hardness dependent. This is measured either in the receiving surface water or in groundwater (if it is part of the pathway), or is estimated from national maps. Inland waters EQS applicable to freshwater, 'other' waters EQS applicable to coastal or transitional waters. This table and the results of the assessment are considered as a first screening for potential risks of pollution of Controlled Waters. More specific requirements may be stipulated by the relevant Agency.					

The results of the screening assessment are presented in Appendix E and are summarised in Table 7-4.

The inland waters EQSs for Cu, Pb, Mn, Ni and Zn are based on bioavailable fraction and so the M-BAT software tool (WFD-UKTAG July 2014) has been used to calculate site-specific Predicted No Effect Concentrations (PNEC)dissolved values, which have been used as EQS for comparison against measured dissolved metal concentrations and consider the calculated bioavailable fraction.

There are no WQT for petroleum hydrocarbon fractions in water. However, because of the sensitivity of the water environment to petroleum hydrocarbons, an initial screening exercise is also included in Table 7-4 irrespective of the assessment scenario(s) stated in Table 7-3.

In some instances, the reporting limit (or detection limit) quoted by the laboratory may be greater than the WQT that it is being assessed against. As the current exercise is an initial screening assessment, further assessment of these elements has not been undertaken.

Table 7-4: Chemicals of potential concern for which further assessment is required (controlled waters)

Chemical of potential concern	Water quality target (WQT) (µg/l)	Basis for water quality target	No. samples	No. samples above LoD	Min. (µg/l)	Max. (µg/l)	No. samples exceeding WQT and above LoD
Soil Leachate Data							
Cadmium	0.08	EQS	5	1	<0.08	0.1	1
Lead	1.2	EQS	5	5	3.1	8.1	5
Copper	1	EQS	5	5	4	25	5
Zinc	12.3	EQS	5	5	2.7	18	2
Phenol	7.7	EQS	5	3	<1	12	2
Deep Groundwater							
Cobalt	3	EQS	4	4	2.2	4.3	1
Copper	1	EQS	8	6	<0.5	7.4	5
Chromium (III)	4.7	EQS	8	8	3.9	6.7	5
Manganese	123	EQS	8	8	0.34	2200	5
Nickel	4	EQS	8	8	3.1	11	5
Ammoniacal Nitrogen	300	EQS	4	4	130	4000	3
Sulphates	400000	EQS	4	4	112000	2370000	1
Ali >EC10-12	10	Withdrawn PWS*	6	2	<10	230	2
Ali >EC12-16	10		6	2	<10	52	2
Aro >EC10-12	10		6	1	<10	82	1
Aro >EC12-16	10		6	1	<10	34	1

Note: the maximum recorded value is compared with the water quality target.
* The Water Supply Regulations 1989 and the Private Water Supply Regulations 1991 both contained a prescribed concentration of 10 µg/l for 'dissolved or emulsified hydrocarbons (after extraction with petroleum ether); mineral oils. This was removed when these Regulations were updated in 2000 (consolidated 2007) and 2009, respectively. However, 10 µg/l is used in this report as an initial screening assessment as it is frequently the preferred approach of the Environment Agency.

7.5.2 *Risk evaluation*

7.5.3 *Leachate Analysis*

There were minor exceedances of EQS values from leachate testing on samples of Made Ground. The exceedance for cadmium, copper, lead, zinc and phenol are considered marginal and Hydrock does not believe they pose a risk to controlled waters.

7.5.4 *Groundwater Analysis*

Metals and metalloids

The groundwater is characterised by minor exceedance for metals and metalloids. The exceedance for cobalt, copper, chromium and nickel are considered marginal and Hydrock does not believe they pose a risk to controlled waters.

The exceedances for Manganese found within groundwater are considered to be associated with geology and are naturally occurring elevated concentrations.

Inorganics

The concentrations of sulphate found within groundwater are considered to be associated with geology and are naturally occurring elevated concentrations.

Although ammoniacal nitrogen within the groundwater in the head deposits is elevated at 400µg/l, given the depth of this groundwater table circa 9.20m bgl it is unlikely to recharge the onsite drainage ditches and ponds which are more likely recharged by rainfall events and overland flow. An Environment Agency sampling station downstream from site on the River Lostock below Leyland Etw (Sampling station ID NW-88003183) found ammoniacal nitrogen concentrations below the EQS in the order of 163 and 253µg/l. There is no evidence that ammoniacal nitrogen concentrations within groundwater underlying the site are impacting on controlled waters.

Organics

Within the groundwater within the Head Deposits there were exceedances for Aliphatic >EC10-12 and >EC12-16 ranges. As shown in CL: AIRE, 2017 guidance on hydrocarbon fraction mobility, these fractions are of very low mobility within the groundwater and are unlikely to impact on controlled waters. The exceedance for Aromatic >EC10-12 (82µg/l vs 10µg/l EQS) and Aromatic >EC12-16 (34µg/l vs 10µg/l EQS) are considered marginal and isolated exceedance. Also, at the Environment Agency sampling station downstream from site on the River Lostock there are no references made to visual or olfactory evidence of hydrocarbon contamination within any of the surface water samples collected.

Summary

Whilst there are concentrations of Chemicals of Potential Concern elevated above the water quality criteria, based on the investigation works undertaken to date and subject to agreement with the Environment Agency, Hydrock does not believe the site poses a significant risk to Controlled Waters.

7.6 Ground gases risk assessment

7.6.1 Data

It is judged from the available evidence that the gas generation potential at the site is low to moderate (due to the deep made ground associated with former site uses and potentially infilled ponds) and that the sensitivity of the development is moderate (due to the long-term inhabitancy of the prison block). Consequently, and in accordance with CIRIA C665 (Table 5.5a and 5.5b), an appropriate minimum monitoring regime is six readings over 3 months, provided other monitoring requirements are also met, such as prevailing atmospheric pressure conditions (for example, BS 8485:2015 +A1:2019 suggests monitoring should include a period of falling atmospheric pressure).

Hydrock has undertaken six readings required and E3P undertook two monitoring visits, monitoring has been completed during periods of falling and low atmospheric pressure. As such, the conclusions presented below are final.

7.6.2 Assessment

The risks associated with the ground gases methane (CH_4) and carbon dioxide (CO_2) have been assessed using BS 8485:2015 +A1:2019, which cites the guidelines published by CIRIA (Wilson et al 2007) (known as Situation A).

There is an alternative assessment method described by the NHBC (Boyle and Witherington 2007) (known as Situation B). Whilst 'Situation B' may also be suitable for the assessment, it is Hydrock's opinion that the NHBC Guidelines are not at the current time fully aligned with current ground gas risk assessment principles (as described in BS 8485:2015 +A1:2019). As such, 'Situation A' has been chosen as the means by the gas risk will be assessed.

The assessment guidelines published by CIRIA are based on interpretation of the gas concentrations and the gas flow rates, amongst other variables, and are compliant with the model procedures of LCRM. The modified Wilson and Card assessment has been used by comparing the maximum gas concentrations and gas screening values (GSV[1]) in Appendix D with the published table (CIRIA Table 8.5) and the assessment is summarised in Table 7-5. The assessment is presented in Appendix D.

In addition, Table 7-5 summarises a ternary plot assessment of the data (assessment of ground gas ratios (O_2 + N_2, CO_2 and CH_4)), undertaken in general accordance with guidance by Wilson et. al. (2018). The ternary plot assessment is presented in Appendix D.

Table 7-5: Ground gas risk assessment

	Min	Max	Typical (i)	Comment
Steady Flow Rate (l/hr)	<0.1	17.6	<0.1	-
Methane (%)	<0.1	3.8	<0.1	There are occasional concentrations of carbon dioxide, elevated above 5% and three reading of methane between 1.4 and 4.6%. Assessment of the data on a ternary plot of ground gas ratios (O_2 + N_2, CO_2 and CH_4), in accordance with guidance by Wilson et. al. (2018), indicates the ground gas present is likely to represent microbial respiration of organic material in soil.
Carbon Dioxide (%)	0.6	10.1	0.1 - 6.8	
Carbon Monoxide (ppm)	<1	26	<5	All values were below the HSE carbon monoxide action level of 20ppm apart from one occasion when a concentration of carbon monoxide of 26ppm was marginally elevated, recorded in BH1505.
Hydrogen Sulphide (ppm)	<1	<1	<1	-
Oxygen (%)	0.5	21.6	>15	-
Carbon Dioxide GSV (l/hr)	0.01	1.24	<0.07	CS1
Methane GSV (l/hr)	0.00	0.19	<0.07	CS1
(i) Hydrock assume that values are considered to be atypical if 95% or more of the remaining data are less than the value under consideration For the purposes of the calculation, where the recorded gas flow rate is below the manufacturer's limit of detection for the instrument used, the detection limit has been adopted for the gas flow rate				

Although elevated concentrations of carbon dioxide >5% where recorded on 23 out of 57 readings these response zones are within the Head Deposits or Glacial Till, where no notable gas source was encountered during drilling of the boreholes. Also, the calculated gas screening values related to these elevated carbon dioxide concentrations are classified as CS1.

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[1] Note: GSV is synonymous with 'site characteristic hazardous gas flow rate' (Q_{hgs}) of BS 8485:2015 +A1:2019 Table.

Locally within WS102 elevated methane was recorded between 1.4 and 3.8% and carbon dioxide between 5.3 and 7.5%. As part of the enabling works due to the compressible nature of the backfill within the pond it will require over excavation, therefore removing the organic Made Ground which poses a gas risk. Following removal of the Made Ground associated with the pond, post enabling works gas monitoring should be complete to confirm if gas conditions remain as CS1.

On one occasion within BH103, BH105 and BH107A the gas screening values for carbon dioxide were classified as CS2 conditions, however on all other monitoring round within these boreholes the gas screening values for carbon dioxide were characterised as CS1. Also, these boreholes have response zones within the Head Deposits where no notable gas source was encountered during the drilling of the boreholes.

As indicated in Table 7-5, the computed GSV for carbon dioxide and methane indicates CS1 conditions, and whilst carbon dioxide concentrations have been measured at concentrations 'typically' above 5% and three reading of methane between 1.4 and 4.6%, assessment of the data using ternary plots indicates the ground gas present is likely to represent microbial respiration of organic material in soil, which is a low risk. As such, the site is classified as Characteristic Situation 1 (Situation A). The CS1 gas regime locally at WS102 is subject to post-enabling works following removal of the pond backfill.

7.6.3 Off-site risks from carbon dioxide and methane

The National Planning Policy Framework in England requires that a developed site should be incapable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990. This position includes a consideration of the potential for off-site migration of ground gases that may impact on adjacent properties.

Consequently, it may be necessary to consider the imposition of measures to protect adjacent, off-site receptors. In this case given that there is no significant viable source of ground gas generation and the surrounding area comprises of low permeability clay of the Glacial Till there is unlikely to be a viable pathway for ground gas onsite to migrate offsite.

7.7 Construction materials risk assessment

7.7.1 Water pipelines

A formal water pipe investigation and risk assessment is beyond the scope of this report. However, the findings of this investigation have been compared to the threshold values in Water UK HBF (2014), Table 1 as far as is practicable, to give an indication of the possible restrictions to the use of plastic pipes for water supply to the site (see the reference in Appendix I for further information).

The site is predominantly previously undeveloped, with brownfield associated with the land surrounding the existing prison. Assessment has indicated no exceedance of the threshold values in the greenfield part of the site. However, locally close to the existing prison, threshold values for petroleum hydrocarbons were exceeded specifically in WS106E, WS111E and WS118E at depths of a proposed pipe of 0.80m and 1.00m bgl,

7.7.2 Other construction materials

Plastic pipes for drains and sewers are manufactured from unplasticized poly (vinyl chloride) (PVC-U), polypropylene (PP) or polyethylene (PE). These materials may be affected by the presence of organic compounds in the soil.

In accordance with the British Plastics Federation Guidance (August, 2018), locally the concentrations of petroleum hydrocarbons (TPH) are above 200 mg/kg, the pipework manufacturer should be consulted with regard the suitability of the pipework.

The implications for buried concrete are discussed in Section 6.8.

7.8 Contamination risks to ground workers

7.8.1 Introduction

Whilst risks to construction workers are not discussed in detail, the following section discusses potential risks that should be considered.

Information presented in this document is provided to assist in managing the risk associated with contamination in soil and groundwater at the site but is not definitive. The Contractors are responsible for undertaking their own assessments and assessing what risks are present and what control measures are required.

Task specific risk assessments and method statements should be in place, and risks and required mitigation measures communicated to all relevant personnel prior to the works commencing. Appropriate PPE and, if required, RPE should be provided and utilised.

7.8.2 PAH and petroleum hydrocarbons

The soils contain PAH and petroleum hydrocarbons, recorded as hotspots within Made Ground.

7.8.3 Ground Gas

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

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

7.8.4 Asbestos

Occasional visible fragments of suspected asbestos cement sheeting have been identified during the ground investigation.

All site staff should be made aware that there is a likelihood of encountering further asbestos containing materials within the Made Ground anywhere on the site, and at any stage of the development. It is advised that the Contractor should supply suitable and sufficient 'Asbestos Awareness' training (specific to asbestos in soils) to all site staff who could foreseeably encounter asbestos containing materials during the course of their work.

The Contractor for each stage of works must undertake a suitable and sufficient Risk Assessment in accordance the Regulation 6 of the Control of Asbestos Regulations 2012 (CAR2012). The results of the assessment should be used to compile a methodology in accordance with Regulation 7 of CAR2012, which limits potential exposure and spread of asbestos fibre. Appropriate training should be provided to all site staff identified within the risk assessment as having the potential to be exposed or encounter asbestos during their work in accordance with Regulation 10 of CAR2012.

It is the responsibility of the Contractor to ensure that mitigation measures are suitable and sufficient to prevent exposure to airborne asbestos so far as is reasonably practicable in accordance with Regulation 11 of CAR2012.

It is recommended that any asbestos cement sheeting encountered is handpicked under controlled conditions in accordance with HSG210 'Asbestos Essentials'. Hand picking needs to be undertaken by suitably qualified Contractors in accordance with HSE guidance and an Environmental Permit. All ACM must be suitably packaged, placed in a dedicated, covered and lockable skip pending off-site disposal to a suitably licensed waste facility.

In addition to the presence of occasional visible fragments of suspected asbestos cement sheeting, there is potential for low concentrations of asbestos fibre (<0.001%). The Contractors for each stage of works must manage the risks in accordance with HSE Guidance and CAR 2012. However, the asbestos fibres detected at the site are within a soil matrix, and if this is kept damp, this should assist in minimising the risk of the release of airborne fibres.

7.9 Findings of the generic contamination risk assessments

The potential sources, pathways and receptors identified in the desk study (Section 3) have been investigated (Sections 4 and 5) and assessed (Sections 7.2 to 7.7). A Source-Pathway-Receptor linkage assessment has been undertaken and is presented in Appendix H (Table K.2).

The final Conceptual Model is illustrated on Hydrock Drawing 19851-HYD-XX-XX-DR-GE-0009 in Appendix A.

A summary of the Source-Pathway-Receptor (SPR) contaminant linkages for which the risks may be unacceptable and require mitigation (those that are moderate or higher) are discussed in Table 7-6.

Table 7-6 assumes the following SPR linkages which have been discounted (subject to agreement) at the risk evaluation stage are confirmed by the regulators and the warranty provider as not requiring further consideration (mitigation). If these assumptions are not agreed during regulatory discussions, the conclusions as noted in Table 7-6 will need to be updated:

- The elevation for Aliphatic >EC12-EC16 within WS111E and WS118E are considered marginal and within a hydrocarbon fraction that has a very low mobility within water and therefore are immobile.
- The exceedance from the leachate testing for cadmium, copper, lead, zinc and phenol are considered marginal and Hydrock does not believe they pose a risk to controlled waters.
- Exceedance for Aliphatic >EC10-12 and >EC12-16 ranges are considered not to pose a risk to controlled waters to their very low mobility.
- The exceedance for Aromatic >EC10-12 (82µg/l vs 10µg/l EQS) and Aromatic >EC12-16 (34µg/l vs 10µg/l EQS) are considered a marginal and isolated exceedance.
- The exceedances for Manganese and Sulphate found within groundwater are considered to be associated with geology and are naturally occurring elevated concentrations.
- The exceedance from the groundwater analysis for cobalt, copper, chromium and nickel are considered marginal and Hydrock does not believe they pose a risk to controlled waters.

- Ammoniacal nitrogen within the groundwater is not considered to pose a risk to controlled water given the concentrations within the River Lostock downstream being below the EQS. There is no evidence that ammoniacal nitrogen concentrations within groundwater underlying the site are impacting on controlled waters.

Table 7-6: Residual risks following risk evaluation

Contaminant Linkage				Comments	
Pollutant Linkage	Sources	Pathways	Receptors	General	Mitigation
PL 1.	PAH hotspots within the Made Ground.	Ingestion.	Human health.	Significant exceedance of the GAC.	Mitigation required in the form of excavation, disposal and verification.
PL 2.	Hotspot of petroleum hydrocarbons within WS106E between 0.80m and 1.00m bgl.	Ingestion or inhalation.	Human health.	Significant exceedance of the GAC.	Mitigation required in the form of excavation, disposal and verification.
PL 3.	Asbestos-containing materials in the Made Ground and at the surface.	Inhalation of fugitive dust.	Human health.	Hard/cement type asbestos present locally in the Made Ground and also at the surface east of the pavilion.	Any ACM encountered during earthworks will need to be handpicked and removed from site.
PL 4.	Asbestos fibres from insulation or asbestos-containing materials in the buildings.	Inhalation of fugitive dust.	Human health (site neighbours).	Asbestos noted in old buildings.	Removal will be required. However, removal under controlled conditions should limit off-site emissions
PL 5.	Unforeseen contamination below the existing farm buildings and those associated with the prison.	Ingestion, inhalation or direct contact.	Human health.	Areas not investigated due to the presence of existing buildings.	Further investigation and risk assessment required post demolition.
PL 6.	TPH within shallow soils.	Direct contact	Water supply pipes.	Locally the shallow Made Ground contains a sum of Aliphatic and Aromatic hydrocarbons above the PE pipe threshold.	Installation of “Protectaline” (or similar) pipework for the site.

Contaminant Linkage				Comments	
Pollutant Linkage	Sources	Pathways	Receptors	General	Mitigation
PL 7.	Bituminous bound hardstanding potentially containing coal tar.	Ingestion or direct contact	Human health.	The existing prison car park where the new boiler compound is proposed may contain coal tar.	Further investigation required to confirm classification of hardstanding for waste disposal purposes.

7.10 Mitigation measures

As described in Table 7-6 (and subject to regulatory agreement), Hydrock consider the following mitigation is required to ensure the site is suitable for use for the proposed end use. These mitigation works will be undertaken in a number of phases and can be separated into:

- Demolition Phase;
- Enablement Phase; and
- Construction Phase.

There will also be a requirement to undertake works to ensure the site is geotechnically suitable.

The methodology for the remediation should be presented in a Remediation Strategy (which will include the 'Implementation Plan', the 'Verification Plan' and the 'Long Term Monitoring and Maintenance Plan'), which will need to be submitted to the warranty provider and the regulatory authorities for approval.

The writing and approval of a Materials Management Plan will be required to allow reuse of suitable material at the site. As treatment of Made Ground is required, an appropriate Environmental Permit will also be required.

Verification reports by a suitably qualified independent geo-environmental specialist will be required following completion of any remedial works (including hotspot removal and validation).

7.10.1 Demolition Phase

The existing buildings and associated infrastructure require demolition and the following works are considered necessary during the Demolition Phase of works:

- refurbishment / demolition asbestos survey;
- site clearance;
- removal of asbestos by specialist Contractors in accordance with the asbestos survey and relevant legislation (PL4);
- removal of above ground tanks and associated pipework;
- demolition of site buildings and ancillary structures to slab level; and

- processing the demolition arisings to a suitable specification in accordance with the WRAP 'Quality Protocol: Aggregates from inert waste'.

7.10.2 Enablement Phase

The following works are considered necessary during the Enablement Phase of works:

- break out of all hardstanding and below ground obstructions and processing for reuse in accordance with a suitable specification and a Materials Management Plan (MMP);
- removal of below ground tanks, existing drainage system and associated pipework;
- excavation, verification and disposal of hotspots for PAHs and petroleum hydrocarbons (PL1 and PL2);
- hand picking of visible cement type asbestos encountered during the earthworks and disposal of site (PL3);
- examination of soils below and around all potential point sources including stores of fuels or machinery within the existing farm buildings and excavation of impacted soils (as possible depending on site constraints) (PL5);
- further investigation in the car park where the new boiler compound is proposed to ensure the bituminous bound hardstanding does not contain coal tar (PL7).
- excavation of Made Ground and natural soils as required to allow construction with appropriate materials management and processing of excavated soils using a combination of: excavation and stockpiling and screening of soils to leave the site at the level required for the installation of a working platform, pavement construction and to ensure natural soils remain at cover system formation level to remove the requirement for a cover system.
- Post-enabling works gas monitoring is to be undertaken following removal of backfill associated with the pond (WS102) to confirm CS1 conditions apply (Section 7.6.2);
- off-site disposal of unsuitable or excess material; and
- verification during enablement works.

7.10.3 Construction Phase

The Construction Phase of works will comprise:

- appropriate materials handling and stockpiling in accordance with the Materials Management Plan (MMP);
- installation of Protectaline pipework (PL6);
- import of subsoil and topsoil in accordance with the Materials Management Plan (MMP);
- suitability qualified independent geo-environmental specialist to ensure that post earthworks natural soils remain at cover system formation level, therefore removing the requirement for simple or engineered cover systems.

8. WASTE AND MATERIALS MANAGEMENT

8.1 Introduction

The Waste Framework Directive (WFD) (2009/98/EC) defines waste as '*any substance which the holder discards or intends to discard.*' In a geo-environmental context, the waste is most often 'soil' and the two main scenarios are offsite disposal of the material as a waste and/or reuse of the material on site. For cost and sustainability reasons, reuse is preferred to off-site disposal.

Section 8.2 below describes the key issues relating to off-site disposal to landfill and section 8.3 considers requirements relating to reuse of soils and materials management.

8.2 Waste disposal

8.2.1 Principles

Based on the WFD, any material excavated on site may be classified as waste and it is the responsibility of the producer of a material to determine whether or not it is waste. Where off-site disposal is undertaken, the following guidance applies.

Classification is a staged process:

- A hazardous waste is defined under the WFD as one which possesses one or more of fifteen defined hazardous properties. If a waste is not defined as hazardous, then it is non-hazardous.
- Where the materials are soil, it is then be assigned using the 'List of Waste Codes', which classifies the material as either:
    - » hazardous (17-05-03), which is defined as "*soil and stones containing hazardous substances*"; or
    - » non-hazardous (17-05-04), which is defined as "*soil and stones other than those mentioned in 17-05-03*".
    - » Hydrock utilise the proprietary assessment tool, HazWasteOnline™ to undertake this assessment.
- Waste Acceptance Criteria (WAC) testing is then undertaken if required, and are only applicable following classification of the waste, and only where the waste is destined for disposal to landfill. The WAC are both qualitative and quantitative. The WAC and the associated laboratory analyses (leaching tests) are not suitable for use in the determination of whether a waste is hazardous or non-hazardous.

It should be noted that some non-hazardous wastes may be suitable for disposal at an inert landfill as non-hazardous waste, subject to meeting the appropriate waste acceptance criteria.

It should be noted that classification must be undertaken on the waste produced, by the waste producer. Necessary sampling frequency to adequately characterise a soil population is defined within WM3.

Further discussion with regards to the characterisation process for different scenarios and waste types is provided below.

Topsoil and Peat

Topsoil and peat are biodegradable, therefore if they are surplus to requirements and cannot be re-used in accordance with a Materials Management Plan, they cannot be classified as inert. As such, topsoil and peat need to be classified by a staged assessment and sampling process and would either be classified as hazardous or non-hazardous, depending upon the results of the assessment.

Greenfield Sites

Waste from completely greenfield sites may be accepted at a landfill as inert waste if it meets the requirements of paragraph 10 (wastes acceptable without testing at landfills for inert waste) of the Landfill (England and Wales) (Amendment) Regulations (2005) ('the Regulations') can be met. Paragraph 10 of the Regulations states, "*soils may be able to be classified as inert waste without testing, if:*

- *they are single stream waste of a single waste type;*
- *there is no suspicion of contamination and they do not contain other material or substances such as metals, asbestos, plastics, chemicals, etc.....*"

As such, where the site is greenfield and the waste producer is confident about the quality of a soil (i.e., naturally occurring and uncontaminated), further sampling and laboratory testing is not necessary for the Basic Characterisation and this can be undertaken on qualitative Waste Acceptance Criteria testing.

In this instance the waste producer can characterise the waste based on visual assessment and written description of the waste in addition to supporting evidence such as a desk study assessment of the greenfield status. However, it should be noted this characterisation is subject to agreement by the landfill operator who may require testing to be undertaken to confirm classification.

Contaminated or potentially contaminated sites

If the site is brownfield, contaminated or potentially contaminated, the waste must undergo an initial waste classification exercise using background information on the source and origin of the waste and assessment of chemical test data in accordance with Environment Agency Technical Guidance WM3.

If following the initial waste classification exercise, the soils are acceptable for disposal to a non-hazardous landfill, further qualitative Waste Acceptance Criteria (WAC) testing is not required.

However, if soils are potentially able to be disposed to an inert landfill as non-hazardous waste, or require testing to determine if they can be disposed of to a stable non-reactive hazardous or hazardous class of landfill, the next stage of assessment is to undertake qualitative WAC testing. This will determine the Basic Characterisation and the landfill category at which the soils can be accepted.

Hazardous material must be subjected to WAC testing to determine whether it requires treatment before it can be accepted at the hazardous landfill, while non-hazardous material can be tested to determine whether it may be suitable for placement in an inert landfill.

8.2.2 HazWasteOnline™ assessment

As the site is brownfield, in order to inform the preliminary waste characterisation process, Hydrock has undertaken an exercise using the proprietary web-based tool HazWasteOnline™. The output of the HazWasteOnline™ assessment is provided in Appendix F and a summary of the preliminary waste classification is provided below in Section 8.2.4.

8.2.3 WAC Testing

The site is brownfield and the qualitative WAC tests are provided in Appendix F and a summary of the preliminary waste disposal options is provided below in Section 8.2.4.

8.2.4 Preliminary waste disposal options

The site is predominantly greenfield with some areas of brownfield (as proven by the desk study assessment and a visual assessment of the soils). WAC testing and the HazWasteOnline™ assessment have been undertaken. If suitable segregation of different types of waste is put in place, for soils to be disposed of, it is considered that:

- The Topsoil, Natural Soils and 'General' Made Ground is likely to be classified as non-hazardous waste.
- A WAC teste undertaken on Made Ground BH107A found the soils to be classified as non-hazardous due to total organic carbon concentrations.
- Any soils containing > 0.1% asbestos or visible asbestos containing materials would be considered as hazardous.

8.2.5 General waste comments

It should be noted that:

- It is the waste producer's responsibility to segregate the waste at source and waste producers must not mix waste materials/streams or dilute hazardous components, for example by mixing with less or non-hazardous waste on site to meet WAC limit values.
- The above preliminary assessment has been made on the basis of the soils tested as part of the ground investigation, using WAC testing and the HazWasteOnline™ assessment. However, the formal classification of waste can only be undertaken on the material to be disposed of, and by the waste producer and the receiving landfill as license conditions vary from landfill to landfill.
- Basic Characterisation should be undertaken in accordance with Environment Agency guidance by the waste producer. Hydrock can assist if required and this report will assist the characterisation. However, Basic Characterisation does not form part of the current commission and would require further assessment and testing on the wastes actually to be disposed.
- Once the waste producer has undertaken an initial Basic Characterisation on each waste stream, they can manage the soils as part of the on-site processing programme (for example, stockpiling, treatment, screening and separation). The waste producer and landfill operator will then need to agree the suite of compliance testing for regularly generated waste to demonstrate compliance with the initial Basic Characterisation prior to disposal.
- At the time of disposal, additional testing on the excavated soils to be disposed of, will likely be necessary.

- Non-hazardous and hazardous soils require pre-treatment (separation, sorting and screening) prior to disposal.
- The costs for disposal of non-hazardous and hazardous soils are significant compared to disposal of inert material.
- In addition to disposal costs, landfill tax will be applicable. Non-hazardous and hazardous waste will generally be subject to the Standard Rate Landfill Tax. Inert or inactive waste will generally be subject to the Lower Rate Landfill Tax. The landfill tax value changes each April and can be found at https://www.gov.uk/government/publications/rates-and-allowances-landfill-tax/landfill-tax-rates-from-1-april-2013.
- Before a waste producer can move waste to a landfill site for disposal, they need to check the landfill site has the appropriate permit and must have completed the following[2]:
  - Duty of care transfer note / Hazardous Waste consignment note, including comment as to if pre-treatment has been undertaken; and
  - Basic Characterisation of the waste, to include: description of the waste; waste code (using list of wastes); composition of the waste (by testing, if necessary) and; WAC testing (if required).

8.3 Materials management

8.3.1 Introduction

Soils that are to remain on site, should be managed and reused in accordance with a Materials Management Plan (MMP), prepared in accordance with 'The Definition of Waste: Development Industry Code of Practice', Version 2 (CL:AIRE), known as the DoWCoP. Where all aspects of the DoWCoP are followed the soils are considered not to be waste, because they were never discarded in the first place.

Version 2 of the DoWCoP clearly sets out the principles and an outline of the requirements of a MMP. The following compliance criteria must be seen to apply to the MMP for the site:

- Factor 1: Protection of human health and protection of the environment.
- Factor 2: Suitability for use, without further treatment.
- Factor 3: Certainty of Use.
- Factor 4: Fixed Quantity of Material.

The reuse of soils at sites should be considered during the planning and development design process so that compliance with issues such as fixed quantity and certainty of use clearly relate to agreed site levels. Suitability of Use is normally evident from the remediation strategy or the design statement, which form an integral part of a MMP. However, some soils may need to be tested post-excavation to prove they are suitable for use.

Once the MMP is finalised, it must be declared by a Qualified Person (QP). The Declaration is an on-line submission as part of which the QP is required to confirm that the declaration is being made before the relevant works have commenced (i.e., it is not a retrospective application).

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[2] ENVIRONMENT AGENCY. November 2010. Guidance on waste acceptance procedures and criteria. Waste acceptance at landfills. The Environment Agency.

Once all material movements have been completed in accordance with the MMP a verification report must be produced, kept for 2 years and provided to the EA on request.

It should be noted that failure to comply with the requirements of the DoWCoP when re-using materials has potentially significant consequences for the waste holder. The risk is that the reused materials are still regarded as a waste that has been illegally deposited. From 1 April 2018, the scope of Landfill Tax has been extended to sites operating without the appropriate environmental disposal permit, and operators of illegal waste sites will now be liable for Landfill Tax. Further information is available at: https://www.gov.uk/government/publications/landfill-tax-disposals-not-made-at-landfill-sites/landfill-tax-disposals-not-made-at-landfill-sites.

If soils are excavated and reused on sites (or moved to another site) without a MMP, exemption, or appropriate Permit in place, anyone who knowingly facilitates the disposal may be ‘*jointly and severally liable’* to any assessment of tax, fines or prosecution.

8.3.2 Materials management scenarios

The materials management scenarios present on site are discussed below.

It should be noted that more than one scenario may apply, dependent upon where the soils are proposed for reuse.

8.3.2.1 Clean, naturally occurring materials – reused on the site of origin

Where soils are naturally occurring, uncontaminated and are reused on the site they are excavated (i.e. greenfield site with documented site history, with no Made Ground), they will fall outside the Waste Framework Directive (WFD) (i.e. they will not be a waste when reused on the site of origin).

However, there needs to be certainty of that reuse, and evidence is necessary to support this strategy, for example through information provided during the planning process. The onus is on the developer to demonstrate that the materials are not a waste and will never become a waste. As such, a Materials Re-use Strategy is recommended to show certainty. Alternatively, if the volume of material is under 1,000 tonnes, then a U1 waste exemption may be applied for from the Environment Agency.

It may be noted that some ‘clean naturally occurring materials’ may still fail the ‘suitable for use’ test, for example, soils with a naturally high organic content may not be suitable for use because of their propensity to produce ground gases such as methane. Rules regarding other more unusual circumstances such as where natural soils contain an unacceptably high mineral content are described in the DoWCoP.

8.3.2.2 Made Ground and other contaminated soils

On sites where Made Ground or contaminated soils are present, any soils excavated will be a waste as soon as they are excavated (even if they are clean, naturally occurring materials), unless they are subject to reuse in accordance with the DoWCoP. As such, for any brownfield site or a site where Made Ground is present and soils are being moved and reused, the materials could be deemed a waste, subject to either:

- a Materials Management Plan (MMP), to prevent the material being classified as a waste following reuse; or
- an exemption (for limited volumes); or

- an environmental permit, dependant on its status.

Other commonly occurring circumstances are:

If Made Ground is being moved between sites, it must be ensured that appropriate permits are in place to ensure the soils are not classified as a waste. Made Ground cannot be moved between sites under DoWCoP alone and would require relevant permits as part of the MMP documentation for the Hub site the material is being treated at.

8.3.2.3 Made Ground and other contaminated soils

All recycled materials (6F2 etc.) must be produced under the 2013 WRAP 'Quality Protocol: Aggregates from inert waste', whether on site or off-site. If they are not, they will be deemed a waste and can only be used on site under a permit. More information can be found at https://www.gov.uk/government/publications/quality-protocol-production-of-aggregates-frm-inert-waste.

8.3.2.4 Geotechnical improvement requirements

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

However, should processing be needed (such as screening, treatment or improvement), that would constitute a waste activity and require a mobile treatment permit. This may be as simple as removing oversize material with an excavator bucket, to using a riddle bucket to remove hardcore to full mechanical screening.

9. UNCERTAINTIES AND LIMITATIONS

9.1 Site-specific comments

Due to the presence of existing farm and prison buildings, the ground investigation was unable to target these areas. Further investigation may be required post demolition.

9.2 General comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of Pick Everard on behalf of the Ministry of Justice (the Client), by email dated 30 July 2021 under the terms of appointment for Hydrock, for the sole and specific use of the Client and parties commissioned by them to undertake work where reliance is placed on this report. Any third parties who use the information contained herein do so at their own risk. Hydrock shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared or for use of the report by any parties not defined in Hydrock's appointment.

This report details the findings of work carried out in August and September 2021. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, not all potential environmental constraints or liabilities associated with the site may have been revealed.

Hydrock has used reasonable skill, care and diligence in the design of the investigation of the site and in its interpretation of the information obtained. The inherent variation of ground conditions allows only definition of the actual conditions at the locations and depths of trial pits and boreholes at the time of the investigation. At intermediate locations, conditions can only be inferred.

Groundwater data are only representative of the dates on which they were obtained and both levels and quality may vary.

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

Information provided by third parties has been used in good faith and is taken at face value; however, Hydrock cannot guarantee its accuracy or completeness.

Where the existing report(s) prepared by others have been provided by the Client, it is assumed that these have been either commissioned by the Client, or can be assigned to the Client, and can be relied upon by Hydrock. Should this not be the case Hydrock should be informed immediately as additional work may be required. Hydrock is not responsible for any factual errors or omissions in the supplied data, or for the opinions and recommendations of others. It is possible that the conditions described may have since changed through natural processes or later activities.

The work has been carried out in general accordance with recognised best practice. The various methodologies used are referenced in Appendix I. Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance. Where the phrase 'suitable for use' is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock.

The chemical analyses reported were scheduled for the purposes of risk assessment with respect to human health, plant life and controlled waters as discussed in the report. Whilst the results may be useful in applying the Hazardous Waste Assessment Methodology given in Environment Agency Technical Guidance WM3, they are not primarily intended for that purpose and additional analysis will be required at the time of disposal to fully classify waste. Discussion and comment with regards to waste classification are preliminary and do not form the requirements of 'Basic Characterisation' as required.

Assessment and testing for the presence of coal tar has only been completed at the locations of exploratory holes undertaken for risk assessment purposes. This investigation is not designed to provide a definitive assessment of the risk from coal tar, nor the waste classification for bituminous bound pavement arisings at the site.

Unless otherwise stated, at the time of this investigation the future routes of water supply pipes had not been established. This investigation and sampling strategy may not be fully compliant with UKWIR recommendations. Consequently, a targeted investigation and specific sampling and chemical testing may be required at a later date once the routes of the supply pipes are known. In addition, it is recommended that the relevant water supply company be contacted at an early stage to confirm its requirements for assessment, which may not necessarily be the same as those recommended by UKWIR.

Whilst the preliminary risk assessment process has identified potential risks to construction workers, consideration of occupational health and safety issues is beyond the scope of this report.

The non-specialist UXO screening has been undertaken for the purposes of ground investigation only (i.e., low risk activity in accordance with CIRIA Report C681). Further assessment should be undertaken with regards to other higher risk activities e.g., construction.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds, this report does not constitute a formal survey of these potential constraints and specialist advice should be sought.

Any site boundary line depicted on plans does not imply legal ownership of land.

10. RECOMMENDATIONS FOR FURTHER WORK

Following the ground investigation works undertaken to date, the following further works will be required:

- demolition asbestos survey;
- specialist UXO/UXB risk assessment in accordance with CIRIA Report C681 with regard to construction risk;
- supplementary ground investigation in the existing prison car park and assessment in accordance with ADEPT & CWF Guidance (August 2019) to fully assess potential bituminous bound pavement arisings with regards to the presence of coal tar and waste disposal;
- discussion and agreement with utility providers regarding the materials suitable for pipework;
- discussions with regulatory bodies and the warranty provider regarding the conclusions of this report;
- assessment of tree influence on foundations and design of foundations;
- discussions with piling Contractors regarding conclusions of this report and design of the piles;
- provision of geotechnical design for the Category 2 structures (earthworks and foundations);
- production of a Remediation Strategy and Verification Plan (and agreement with the regulatory bodies and the warranty provider);
- production of a Materials Management Plan relating to reuse of soils at the site;
- remediation and mitigation works; and
- verification of the earthworks, remediation and mitigation works.

11. REFERENCES

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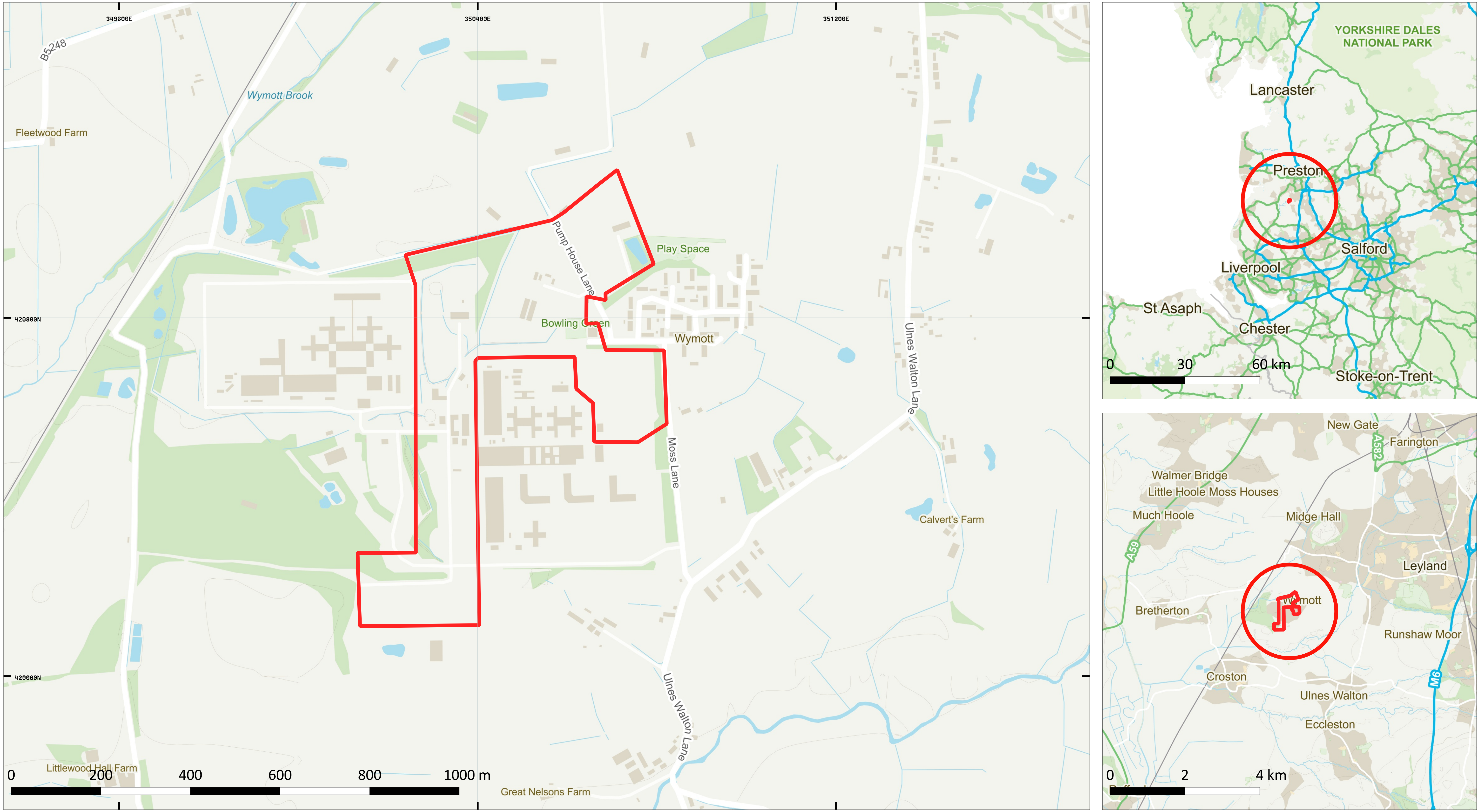
Appendix A Drawing



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KEY PLAN

🟥 Site Boundary

NOTES

1. Contains OS data © Crown copyright and database right (2021)

REVISIONS

FIRST ISSUE: 14/10/2021 RS
APPROVED: 15/10/2021 AC

Hydrock

TITLE
SITE LOCATION PLAN

HYDROCK PROJECT NO.
C-19851

SCALE @ A3
1:8351

CLIENT
MINISTRY OF JUSTICE

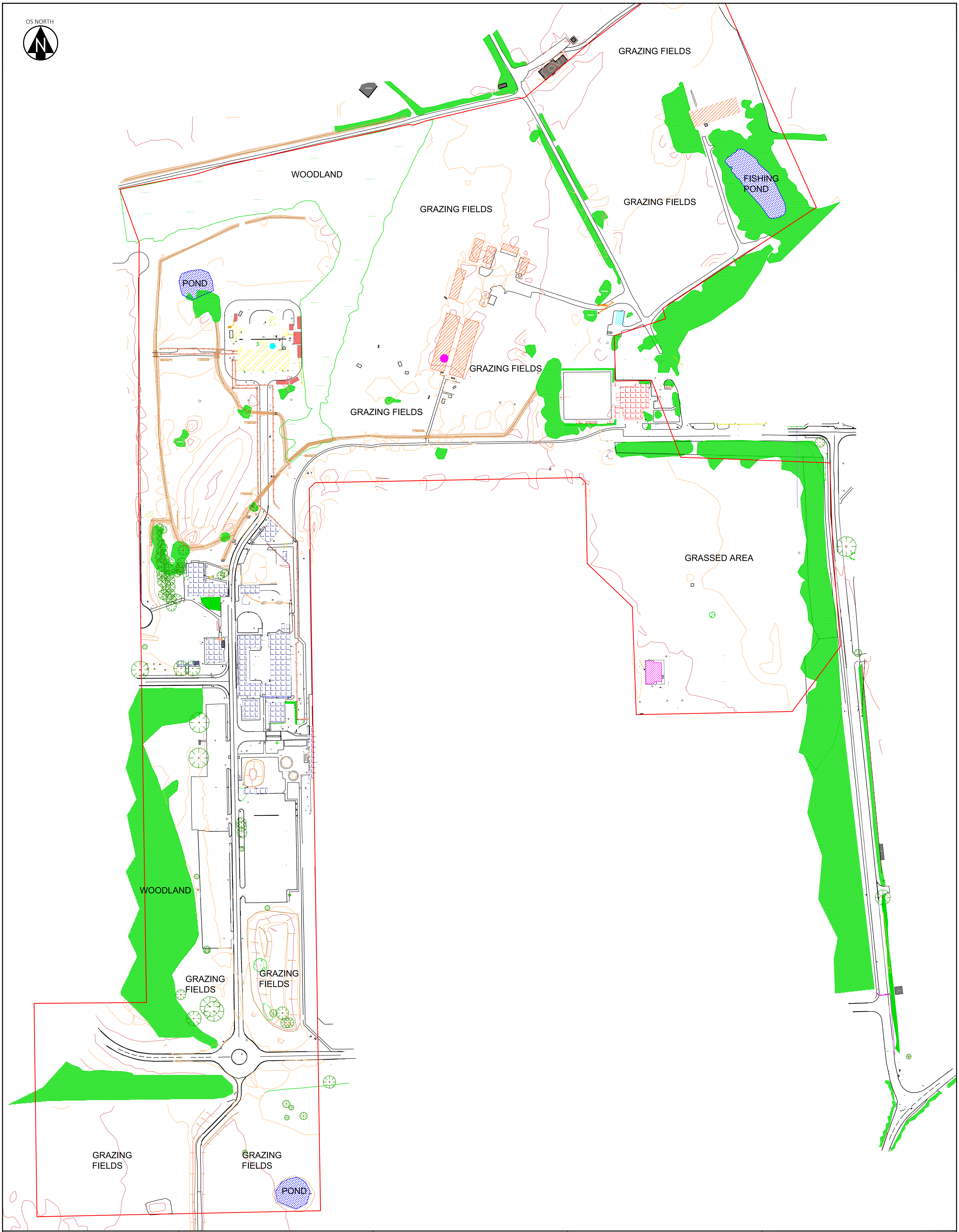
PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

PROJECT
GARTH WYMOTT 2

DRAWING NO.
19851-HYD-XX-XX-DR-GE-0001

REVISION
P01



KEY

- SITE BOUNDARY
- ▨ EXISTING FARM BUILDINGS
- ▨ PAVILION BUILDING
- ▨ ELECTRICAL SUB STATION
- ▦ BUILDING ASSOCIATED WITH SOCIAL CLUB
- ▨ BUILDING ASSOCIATED WITH BOILER HOUSE
- 🟥 ONGOING CONSTRUCTION MODULAR UNIT AND STORES
- ▦ PRISON BUILDINGS
- ● FUEL STORE
- ● WATER TANK

NOTES

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3. This drawing has been based on the following drawings and information: Centara, June 2021, 'Topographical and Utility Survey of Areas of Interest', Drawing Reference CEN-GHX0000-XX-SU-X-1000_S3_P03 Sheets 1 to 22.

P01	FIRST ISSUE					
	RS	19/10/21	DH	20/10/21	DH	20/10/21
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PROJECT
GARTH WYMOTT 2

TITLE
SITE FEATURES PLAN

HYDROCK PROJECT NO.
C-19851-C

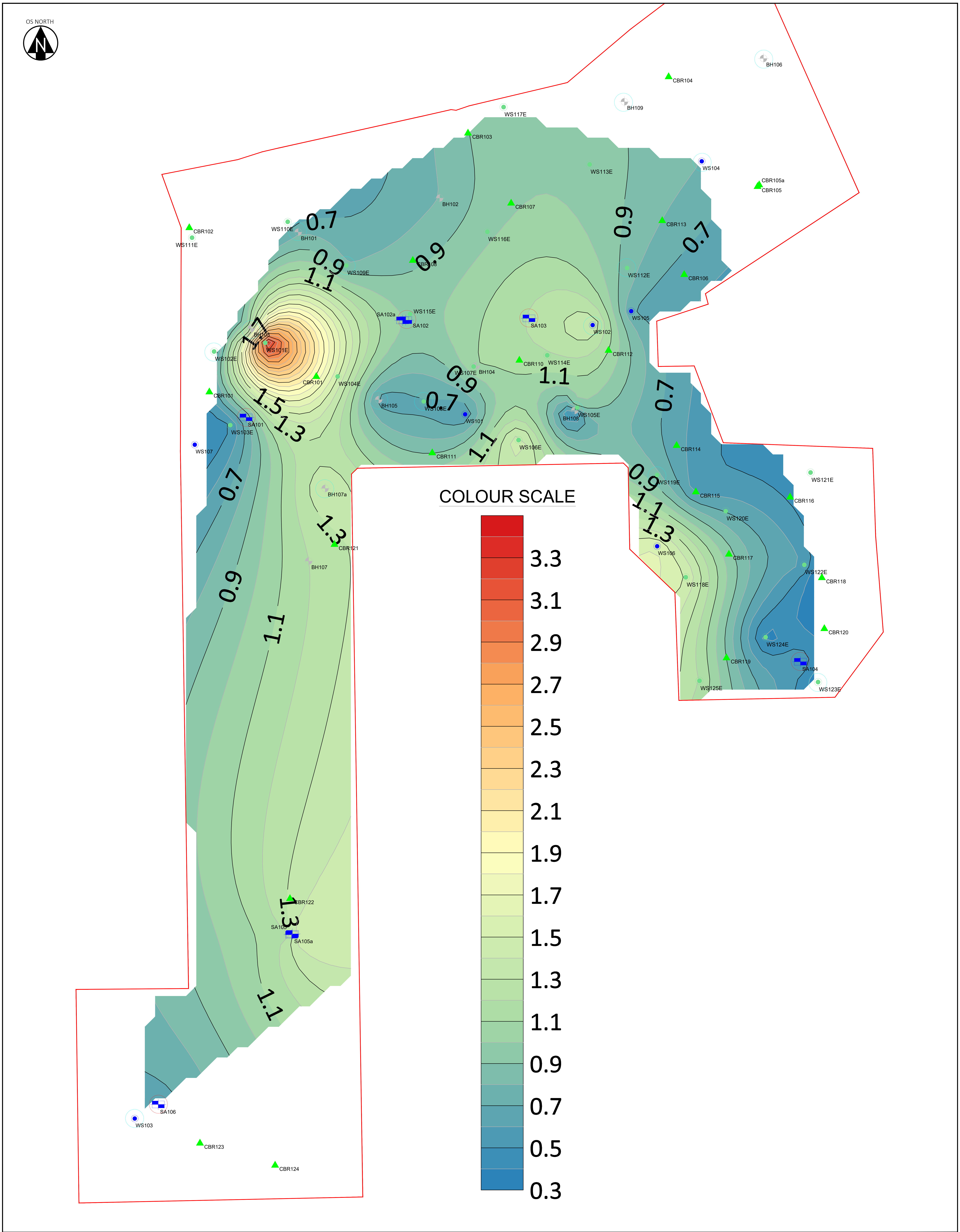
SCALE @ A1
1:750

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
19851-HYD-XX-XX-DR-GE-0002

REVISION
P01



KEY

HYDROCK (2021)

- SITE BOUNDARY
- TPXXX TRIAL PIT
- BHXXX BOREHOLE
- WSXXX WINDOW SAMPLE
- CBRXXX CBR TESTING
- SOAKAWAY INFILTRATION TEST
- BOREHOLE INSTALLATION

E3P (2020)

- WSXXX WINDOW SAMPLE

NOTES

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4. Within BH107, WS101, SA105 and SA105A the base of Made Ground was unproven, however for the purpose of the assessment they have been included with the surface.

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PROJECT
GARTH WYMOTT 2

TITLE
BASE OF MADE GROUND PLAN
(m bgl)

HYDROCK PROJECT NO.
C-19851-C

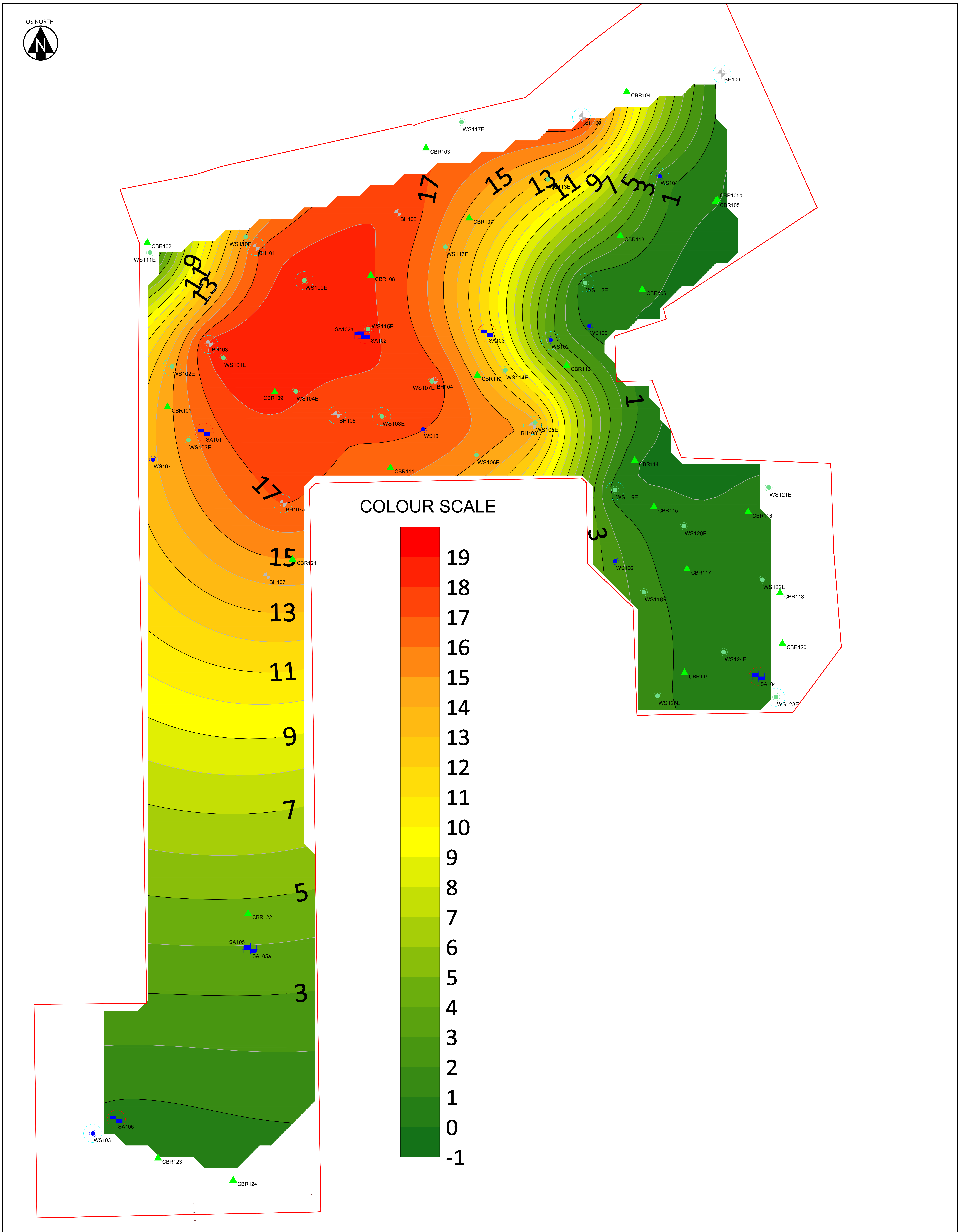
SCALE @ A1
1:750

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
19851-HYD-XX-XX-DR-GE-0004

REVISION
P01



KEY

HYDROCK (2021)

SITE BOUNDARY

TPXXX TRIAL PIT

BHXXX BOREHOLE

WSXXX WINDOW SAMPLE

CBRXXX CBR TESTING

SOAKAWAY INFILTRATION TEST

BOREHOLE INSTALLATION

E3P (2020)

WSXXX WINDOW SAMPLE

NOTES

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TITLE
TOP OF GLACIAL TILL PLAN (m bgl)

HYDROCK PROJECT NO.
C-19851-C

SCALE @ A1
1:750

PURPOSE OF ISSUE
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19851-HYD-XX-XX-DR-GE-0005

REVISION
P01

KEY

HYDROCK (2021)

🟥	SITE BOUNDARY
TPXXX	TRIAL PIT
BHXXX	BOREHOLE
WSXXX	WINDOW SAMPLE
CBRXXX	CBR TESTING
Depth ○	LABORATORY CONFIRMED CEMENT TYPE ASBESTOS
▨	5-10 PIECES OF CEMENT TYPE ASBESTOS
●	SURFACE SAMPLE 1 (SS1)
CTXX	HAND DUG TRIAL PIT

E3P (2020)

WSXXX	WINDOW SAMPLE

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PROJECT
GARTH WYMOTT 2

TITLE
VISIBLE ASBESTOS CONTAINING MATERIALS PLAN

HYDROCK PROJECT NO.
C-19851-C

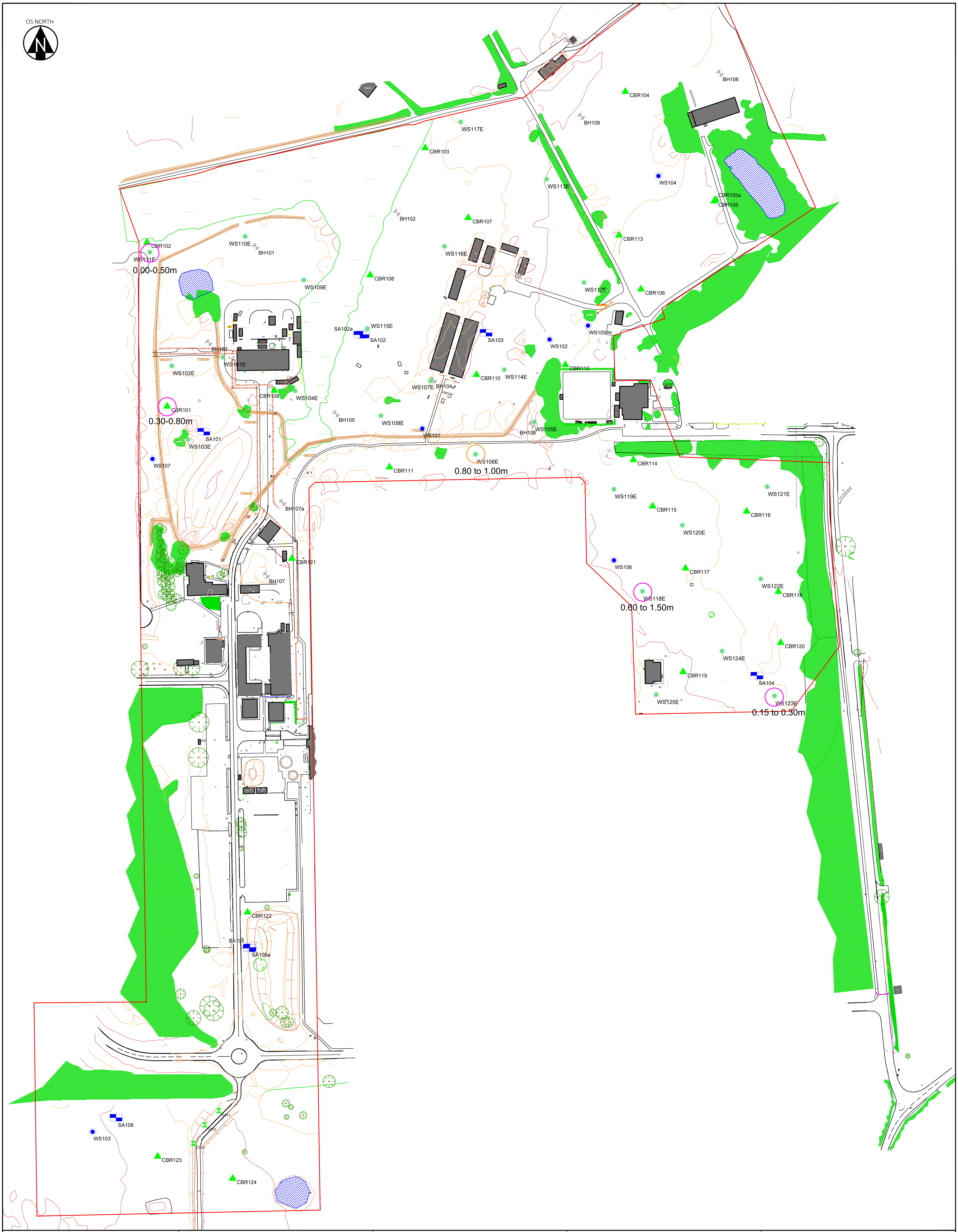
SCALE @ A1
1:750

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
19851-HYD-XX-XX-DR-GE-0006

REVISION
P01



KEY

HYDROCK (2021)

🟥 SITE BOUNDARY

TPXXX TRIAL PIT

CTXX HAND DUG TRIAL PIT

BHXXX BOREHOLE

● WSXXX WINDOW SAMPLE

▲ CBRXXX CBR TESTING

E3P (2020)

● WSXXX WINDOW SAMPLE

○ Depth PAH HOTSPOTS

○ Depth HYDROCARBON HOTSPOT

NOTES

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PROJECT
GARTH WYMOTT 2

TITLE
HOTSPOTS PLAN

HYDROCK PROJECT NO.
C-19851-C

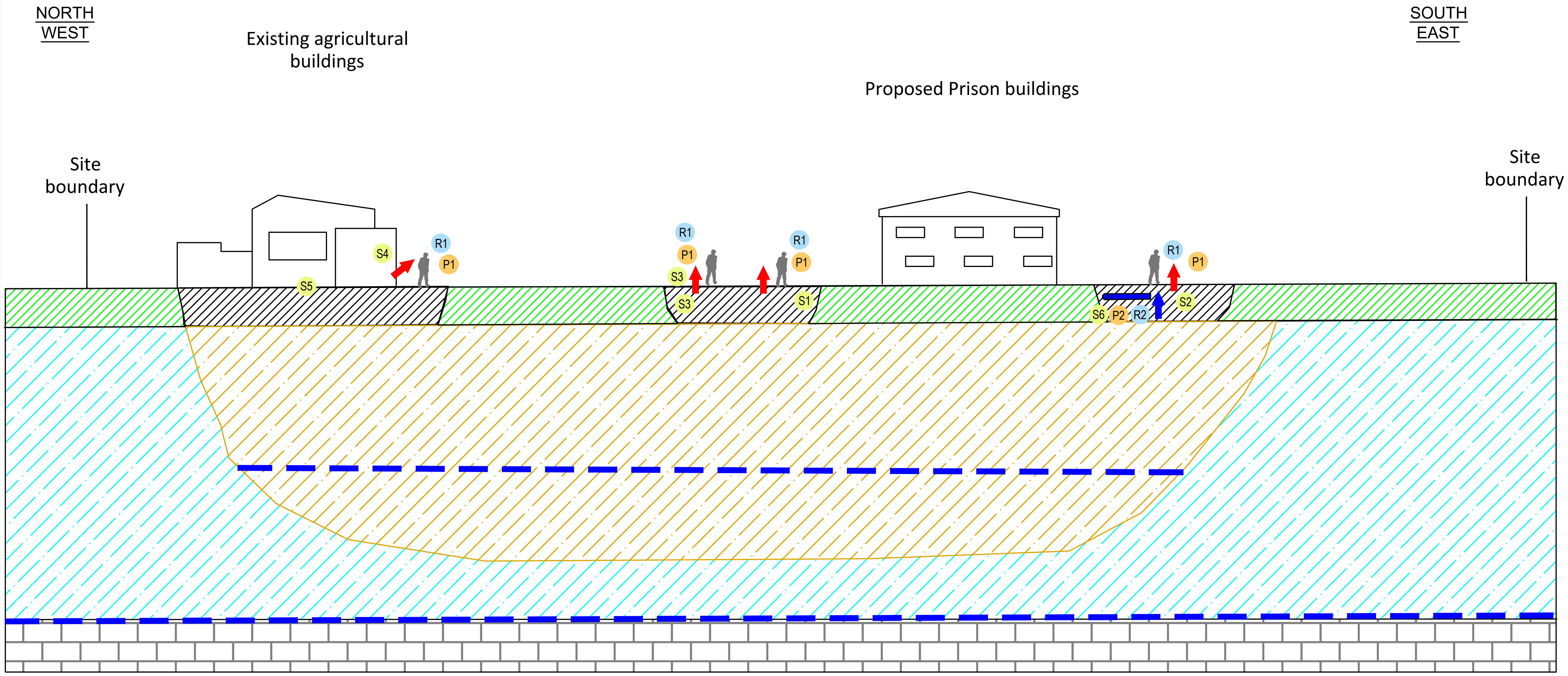
SCALE @ A1
1:750

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
19851-HYD-XX-XX-DR-GE-0008

REVISION
P01



Potential Active Pathways

🡅 DERMAL CONTACT, INGESTION, INHALATION

🡅 DIRECT CONTACT

Potential on-site Sources of Contamination

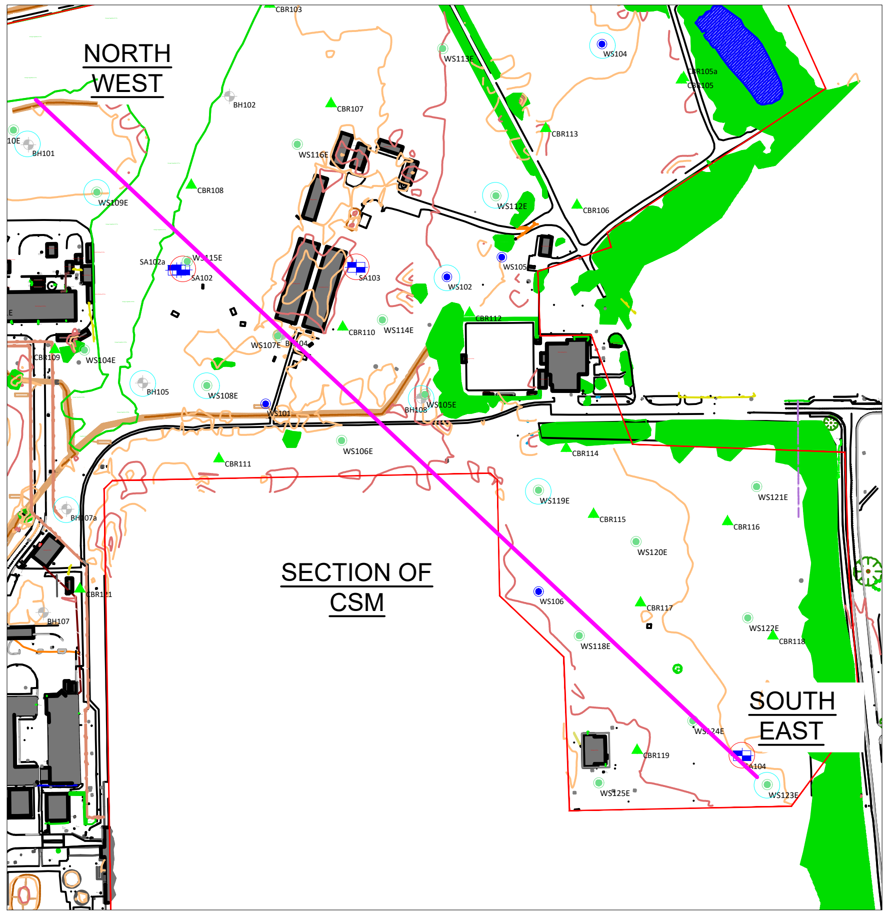
S1	PAH hotspots within the Made Ground.
S2	Hotspot of petroleum hydrocarbons within WS106E between 0.80m and 1.00m bgl.
S3	Asbestos-containing materials in the Made Ground and at the surface.
S4	Asbestos fibres from insulation or asbestos-containing materials in the buildings.
S5	Unforeseen contamination below the existing farm buildings and those associated with the prison.
S6	TPH within shallow soils.
S7	Bituminous bound hardstanding potentially containing coal tar.

Potential Receptors

R1	People (neighbours, site end users.
R2	Development (Utilities).

Potential Pathways

P1	Ingestion, skin contact, inhalation of dust and outdoor air by people.
P2	Direct contact.



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3. This drawing is indicative only.

Key

▨	Made Ground
🟩	Topsoil
▨	Head
▨	Glacial Till
▦	Singleton Mudstone Member
— — —	Groundwater

P01	FIRST ISSUE					
	RS	19/10/21	DH	20/10/21	DH	20/10/21
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PROJECT
GARTH WYMOTT 2

TITLE
FINAL CONCEPTUAL SITE MODEL

HYDROCK PROJECT NO.
C-19851-C

SCALE @ A3
Not to scale

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

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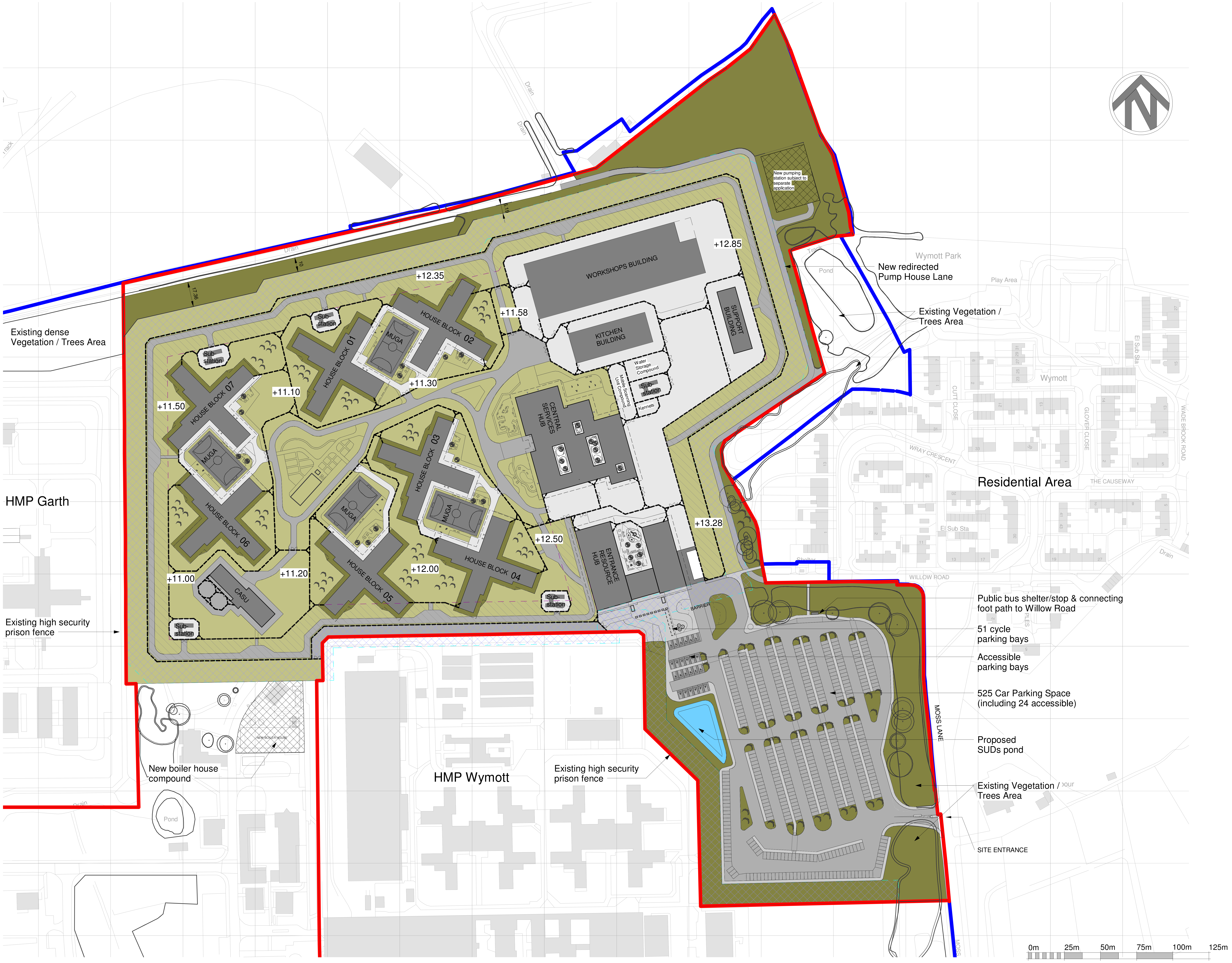
DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
19851-HYD-XX-XX-DR-GE-0009

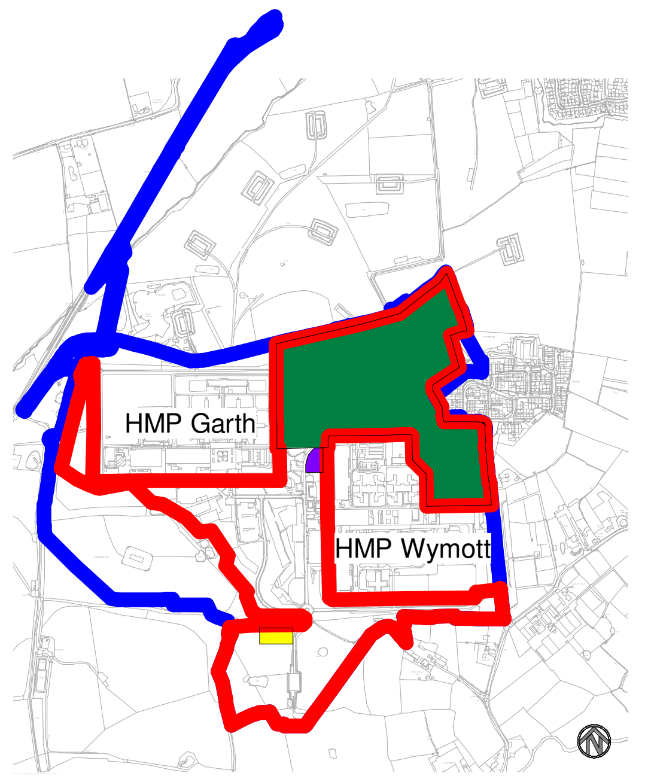
REVISION
P01



VISUAL SCALE 1:1250 @ A1

▨	Road
▨	MUGA (Multi Use Games Area)
■	Building Footprint
▨	15m inner open space
▨	15m outter open space
━	Application Red Line Boundary
━	Ownership Boundary
╍	Security Fence
■	Vegetation / Trees

For proposed & existing hard and soft landscaping please refer to drawing:
608623-0000-PEV-GHX0011-XX-DR-L-0301_
Comprehensive Landscape Masterplan



🟩	New prison site
🟪	New boiler house site
🟨	New bowling green site

Rev	Date	Description
P06	13.07.2021	Amendments following review
P05	09.07.2021	Amendments following review
P04	05.07.2021	Amendments following review
P03	25.06.2021	Amendments following review
P02	13.05.2021	Minor amendments following review
P01	14.04.2021	First Issue

This document references the following linked files

File Reference	Status	Revision
608623-0000-PEV-GHX0011-ZZ-M3-A-0001-D0200	S1	P 00

Project Status
RIBA Stage 2

Client
Ministry of Justice

Project
New Prisons Programme

Ministry of Justice, 102 Petty France, London, SW1H 9AJ

Project Description / Site
New Prisons Programme
Garth Wymott 2

Project Address
Site Adjacent to HMP Garth & HMP Wymott

Building Type
Site Infrastructure

Drawing Title
Site-Block Plan-Proposed-PLANNING

Originator Logo
PICK EVERARD

Drawn By	MDA	Date	14.04.2021
Checked By	RPP	Date	14.04.2021
Approved By	RPP	Date	14.04.2021

Drawing Number	Delref
608623-0000-PEV-GHX0011-ZZ-DR-A-9100	B0700

Sheet No.	Scale	Orig. Sheet Size	Rev.
1 of 1	As indicated	@ A1	P06

Data Security Classification	Suitability
OFFICIAL	S3

Appendix B Exploratory Hole Location Plan, Exploratory Hole Logs and Photographs

Exploratory Hole Location Plan

KEY

HYDROCK (2021)

- SITE BOUNDARY
- TPXXX TRIAL PIT
- CTXX HAND DUG TRIAL PIT
- BHXXX BOREHOLE
- WSXXX WINDOW SAMPLE
- CBRXXX CBR TESTING
- SOAKAWAY INFILTRATION TEST
- BOREHOLE INSTALLATION

E3P (2020)

- WSXXX WINDOW SAMPLE

NOTES

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PROJECT
GARTH WYMOTT 2

TITLE
EXPLORATORY HOLE LOCATION PLAN

HYDROCK PROJECT NO.
C-19851-C

SCALE @ A1
1:750

PURPOSE OF ISSUE
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DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
19851-HYD-XX-XX-DR-GE-0003

REVISION
P01

Hydrock Exploratory Hole Logs

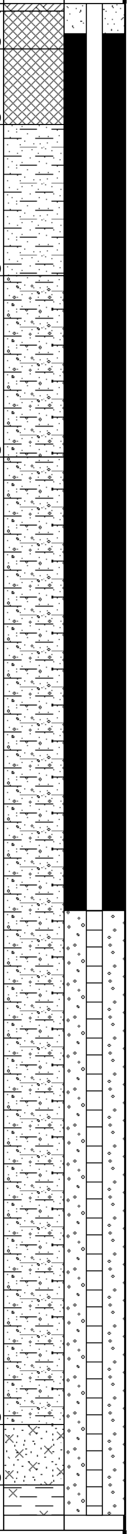
Project: Garth Wymott 2			Borehole No BH101 Page No. 1 of 3
Method: Cable Percussion	Date(s): 06/08/2021 - 07/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350353.53, 420895.53	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.49m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
1.20	SPT	N=9 (1,1,2,2,2,3)
1.20 - 1.65	B	
1.20 - 1.65	D	
2.00	SPT	N=16 (2,3,3,4,4,5)
2.00 - 2.45	B	
2.00 - 2.45	D	
3.00	SPT	N=12 (1,2,2,3,4,3)
3.00 - 3.45	B	
3.00 - 3.45	D	
4.00	SPT	N=15 (2,2,3,4,4,4)
4.00 - 4.45	B	
4.00 - 4.45	D	
5.00	SPT	N=10 (2,2,2,2,3,3)
5.00 - 5.45	B	
5.00 - 5.45	D	
6.50 - 6.95	U	
6.50 - 6.95	U	(19,90%)
8.00	SPT	N=11 (2,3,2,2,3,4)
8.00 - 8.45	B	
8.00 - 8.45	D	
9.50	SPT	N=4 (1,1,1,1,0,2)
9.50 - 9.95	B	
9.50 - 9.95	D	

Stratum Description

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over firm brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.05 0.30	(0.05) (0.25)	10.44 10.19
Stiff brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of brick and coal. (MADE GROUND)		(0.50)	
Light grey angular COBBLES of sandstone and quartzite. (MADE GROUND)	0.80		9.69
Firm brown mottled grey slightly sandy CLAY. (HEAD)	1.80	(1.00)	8.69
Firm to stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. (HEAD)	3.00	(1.20)	7.49
Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. (HEAD)	9.40	(6.40)	1.09
Loose brown silty fine and medium SAND. (HEAD)	9.80	(0.40)	0.69
Soft locally firm reddish brown silty CLAY.			



Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Hole completed at target depth and installed with response zone from 6.00m to 20.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Borehole No
BH101
Page No. 2 of 3

Method: Cable Percussion	Date(s): 06/08/2021 - 07/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350353.53, 420895.53	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.49m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
11.00	SPT	N=16 (3,3,4,4,3,5)
11.00 - 11.45	B	
11.00 - 11.45	D	
12.50	SPT	N=4 (1,1,1,0,1,2)
12.50 - 12.95	B	
12.50 - 12.95	D	
14.00	SPT	N=12 (2,2,2,3,3,4)
14.00 - 14.45	B	
14.00 - 14.45	D	
15.50	SPT	N=12 (2,2,2,3,3,4)
15.50 - 15.95	B	
15.50 - 15.95	D	
17.00 - 17.45	U	
17.00 - 17.45	U	(19,80%)
18.00	SPT	N=19 (3,3,4,4,5,6)
18.50 - 18.95	B	
18.50 - 18.95	D	

Stratum Description

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Soft locally firm reddish brown silty CLAY. (HEAD)	11.60	(1.80)	-1.11
Loose brown silty fine and medium SAND. (HEAD)	14.00	(2.40)	-3.51
Soft locally firm reddish brown silty CLAY. (HEAD)	16.90	(2.90)	-6.41
Stiff becoming very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse of mudstone, siltstone and sandstone. (GLACIAL TILL)		(3.55)	

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Hole completed at target depth and installed with response zone from 6.00m to 20.00m bgl. 4) No visual or olfactory evidence of contamination.

Hydrock	Project: Garth Wymott 2		Borehole No BH101 Page No. 3 of 3
Method: Cable Percussion	Date(s): 06/08/2021 - 07/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350353.53, 420895.53	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.49m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Depth (m)	Type	Results							
20.00	SPT	N=48 (7,8,10,12,12,14)		Stiff becoming very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse of mudstone, siltstone and sandstone. (GLACIAL TILL)	20.45		-9.96	▨	▨
20.00 - 20.45	B								
20.00 - 20.45	D								
				End of Borehole at 20.45m					

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Progress and Observations									Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Hole completed at target depth and installed with response zone from 6.00m to 20.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Borehole No
BH102
Page No. 1 of 3

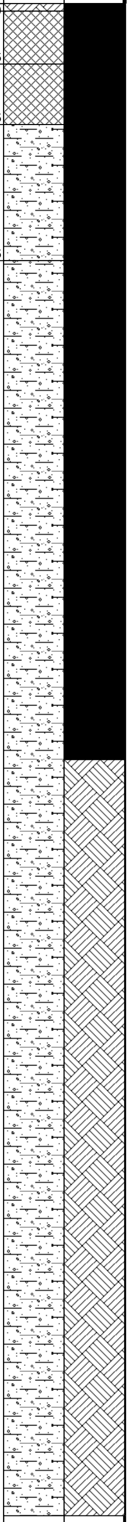
Method: Cable Percussion	Date(s): 23/08/2021 - 25/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350466.84, 420923.17	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.45m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
0.50	HSV	70kPa
1.20	SPT	N=10 (1,1,2,2,2,4)
1.20	B	
1.20	D	
2.00	SPT	N=9 (1,1,2,2,2,3)
2.00	B	
2.00	D	
3.00	SPT	N=12 (2,2,2,3,3,4)
3.00	B	
3.00	D	
4.00	SPT	N=15 (2,3,3,3,4,5)
4.00	B	
4.00	D	
5.00	SPT	N=12 (1,3,2,3,3,4)
5.00	B	
5.00	D	
5.00 - 5.50	B	
6.50	SPT	N=21 (2,3,4,5,5,7)
6.50	B	
6.50	D	
7.50	ES	
8.00	U	(20,100%)
8.00 - 8.45	U	
9.00	U	(22,70%)
9.00 - 9.45	U	

Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD
	Grass over firm dark brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.05	(0.05)	10.40
	Firm locally soft dark brown slightly sandy slightly gravelly CLAY with a occasional rootlets. Gravel is very angular to subrounded fine to coarse of various lithologies. (MADE GROUND)	0.40	(0.35)	10.05
	Firm grey slightly sandy slightly gravelly silty CLAY with occasional rootlets. Gravel is angular to subrounded fine to coarse of various lithologies including brick. (MADE GROUND)	0.80	(0.40)	9.65
	Firm reddish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. Low cobble content of subrounded grey sandstone. (HEAD) *... At 0.90m bgl: groundwater seepage.*	1.70	(0.90)	8.75
	Firm becoming stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. (HEAD)		(8.60)	

Legend | Instrum-entation / Backfill



Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.40m bgl. 3) Hole completed at target depth. 4) Due to sand blowing back up the casing, drillers were unable to install the boreholes and backfilled with arisings and bentonite. 5) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Borehole No BH102 Page No. 2 of 3

Method: Cable Percussion	Date(s): 23/08/2021 - 25/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350466.84, 420923.17	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.45m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
11.00	SPT	N=1 (1,1,0,0,0,1)
11.00	B	
11.00	D	
12.50	SPT	N=13 (2,2,3,3,3,4)
12.50	B	
12.50	D	
14.00	SPT	N=12 (1,2,2,3,3,4)
14.00	B	
14.00	D	
15.50	SPT	N=15 (2,2,3,3,4,5)
15.50	B	
15.50	D	
17.00	SPT	N=15 (2,3,3,4,4,4)
17.00	B	
17.00	D	
18.50	SPT	N=28 (4,5,6,7,7,8)
18.50	B	
18.50	D	

Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD
▽	Firm becoming stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. (HEAD)	10.30		0.15
	Very loose reddish brown fine and medium SAND with pockets of soft sandy CLAY. (HEAD)	11.90	(1.60)	-1.45
	Firm locally soft reddish brown silty CLAY. (HEAD)	14.50	(2.60)	-4.05
	Reddish brown silty fine and medium SAND. (HEAD)	14.90	(0.40)	-4.45
	Firm becoming stiff reddish brown silty CLAY. (HEAD)	17.90	(3.00)	-7.45
	Stiff becoming very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine and medium of mudstone and siltstone. (GLACIAL TILL)		(2.50)	

Progress and Observations / **Chiselling**

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.40m bgl. 3) Hole completed at target depth. 4) Due to sand blowing back up the casing, drillers were unable to install the boreholes and backfilled with arisings and bentonite. 5) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Borehole No BH102 Page No. 3 of 3

Method: Cable Percussion	Date(s): 23/08/2021 - 25/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350466.84, 420923.17	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.45m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Depth (m)	Type	Results							
20.00 20.00 20.00	SPT B D	50/230mm (6,10,11,11,12,16)		Stiff becoming very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine and medium of mudstone and siltstone. (GLACIAL TILL)	20.40		-9.95		
				End of Borehole at 20.40m					

Progress and Observations									Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.40m bgl. 3) Hole completed at target depth. 4) Due to sand blowing back up the casing, drillers were unable to install the boreholes and backfilled with arisings and bentonite. 5) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2		Borehole No BH103 Page No. 1 of 3
Method: Cable Percussion	Date(s): 02/09/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350315.52, 420818.72	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.98m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results	Water-Strikes
0.80	ES		
1.20	SPT	N=10 (1,2,2,2,3,3)	
1.20	B		
1.20	B		
1.20	D		
2.00	SPT	N=13 (2,2,2,3,4,4)	
2.00	B		
2.00	D		
3.00	SPT	N=11 (1,2,2,3,2,4)	
3.00	B		
3.00	D		
4.00	SPT	N=13 (2,2,3,3,3,4)	
4.00	B		
4.00	D		
5.00	SPT	N=13 (1,2,2,3,4,4)	▼
5.00	B		
5.00	D		
6.50	SPT	N=21 (2,3,4,5,5,7)	
6.50	B		
6.50	D		
8.00	U	(21,100%)	
8.00 - 8.45	U		
			▽
9.50	SPT	N=9 (1,1,2,3,2,2)	
9.50	B		
9.50	D		

Stratum Description

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over firm dark brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.10	(0.10)	10.88
Firm orangish brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is very angular to subangular, fine to coarse of brick and limestone. (MADE GROUND)	0.65	(0.55)	10.33
Soft grey slightly gravelly CLAY. Gravel is fine to coarse of brick. (MADE GROUND)	1.10	(0.45)	9.88
Firm yellowish brown slightly sandy CLAY. (HEAD)	2.30	(1.20)	8.68
Firm becoming stiff with depth reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded, fine to coarse of mudstone and siltstone. (HEAD)	8.70	(6.40)	2.28
Soft reddish brown slightly sandy gravelly CLAY. Gravel is subangular to rounded, fine and medium of mudstone. (HEAD)	9.20	(0.50)	1.78
Loose reddish brown silty fine and medium SAND. (HEAD)	9.70	(0.50)	1.28
Soft reddish brown silty CLAY. (HEAD)			

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Hole completed at target depth and installed with response zone from 5.00m to 20.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock

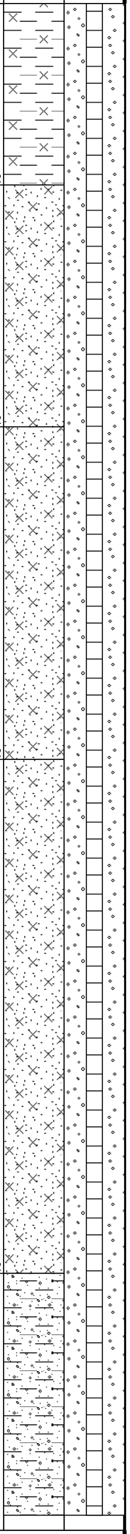
Project: Garth Wymott 2

Borehole No
BH103
Page No. 2 of 3

Method: Cable Percussion	Date(s): 02/09/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350315.52, 420818.72	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.98m OD		Scale: 1:50

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
11.00	SPT	N=9 (1,1,2,2,2,3)	
11.00	B		
11.00	D		
12.50	SPT	N=9 (2,2,2,3,2,2)	
12.50	B		
12.50	D		
12.50 - 13.00	B		
14.00	U	(16,0%)	
15.50	SPT	N=12 (1,2,2,3,3,4)	
15.50	B		
15.50	D		
17.00	SPT	N=16 (2,3,3,4,4,5)	
17.00	B		
17.00	D		
18.50	SPT	N=33 (4,6,7,7,9,10)	
18.50	B		
18.50	D		
19.50 - 20.00	B		

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Soft reddish brown silty CLAY. (HEAD)	11.20	(1.50)	-0.22
Loose reddish brown silty fine and medium SAND. (HEAD)	12.80	(1.60)	-1.82
Reddish brown silty fine and medium SAND. (HEAD)	15.00	(2.20)	-4.02
Medium dense reddish brown silty fine and medium SAND. (HEAD)	18.40	(3.40)	-7.42
Stiff becoming vert stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded, fine to coarse of mudstone, siltstone and sandstone. (GLACIAL TILL)		(2.05)	



Progress and Observations									Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Hole completed at target depth and installed with response zone from 5.00m to 20.00m bgl. 4) No visual or olfactory evidence of contamination.

Hydrock

Project: Garth Wymott 2

Borehole No

BH103

Page No. 3 of 3

Method: Cable Percussion	Date(s): 02/09/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350315.52, 420818.72	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.98m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Depth (m)	Type	Results							
20.00	SPT	50/295mm (6,13,19,26,5,0)		Stiff becoming vert stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded, fine to coarse of mudstone, siltstone and sandstone. (GLACIAL TILL)	20.45		-9.47		
20.00	D								
				End of Borehole at 20.45m					

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Progress and Observations									Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Hole completed at target depth and installed with response zone from 5.00m to 20.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2		Borehole No BH104 Page No. 1 of 3
Method: Cable Percussion	Date(s): 20/08/2021 - 23/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350495.94, 420788.59	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.91m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
0.50	ES	
0.50	ES	
0.50	HSV	63kPa
0.80	B	
0.80	B	
1.20	SPT	N=15 (1,2,3,3,4,5)
1.20	B	
1.20	D	
2.00	SPT	N=11 (1,2,2,3,3,3)
2.00	B	
2.00	D	
3.00	SPT	N=16 (2,2,3,4,4,5)
3.00	B	
3.00	D	
4.00	SPT	N=14 (2,3,3,3,4,4)
4.00	B	
4.00	D	
5.00	SPT	N=10 (2,2,2,3,3,2)
5.00	B	
5.00	D	
6.50	SPT	N=20 (2,3,4,4,5,7)
6.50	B	
6.50	D	
8.00	SPT	N=18 (2,2,3,4,5,6)
8.00	B	
8.00	D	
9.50	SPT	N=19 (1,3,3,4,5,7)
9.50	B	
9.50	D	

Stratum Description

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over firm dark brown slightly sandy slightly gravelly CLAY with frequent rootlets and occasional roots. Gravel is subangular to rounded fine to coarse of various lithologies. (TOPSOIL)	0.05 0.40	(0.05) (0.35)	10.86 10.51
Greyish brown ashy very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of various lithologies including brick and clinker. (MADE GROUND)		(0.70)	
Firm brownish grey slightly gravelly CLAY with low cobble content. Gravel is angular fine to coarse of brick. Cobbles are angular of brick. (MADE GROUND)	1.10		9.81
Firm becoming stiff with depth brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine and medium of mudstone, sandstone and siltstone. (HEAD) *... Between 1.10m to 2.00m bgl: Clay is mottled grey and gravel is occasional coarse.*	10.00	(8.90)	0.91

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Hole completed at target depth and backfilled with arisings and bentonite on completion. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Borehole No BH104 Page No. 2 of 3

Method: Cable Percussion	Date(s): 20/08/2021 - 23/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350495.94, 420788.59	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.91m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
11.00	SPT	N=9 (1,2,2,2,2,3)
11.00	B	
11.00	D	
12.50	SPT	N=12 (2,3,2,3,3,4)
12.50	B	
12.50	D	
14.00	SPT	N=10 (2,2,2,2,3,3)
14.00	B	
14.00	D	
15.50	U	(11,100%)
15.50 - 15.95	U	
17.00	SPT	N=13 (2,2,3,3,4,3)
17.00	B	
17.00	D	
17.00	ES	
18.50	U	(31,100%)
18.50 - 18.95	U	

Stratum Description

Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD
	Loose reddish brown gravelly fine to coarse SAND. Gravel is subangular fine of sandstone and mudstone. (HEAD)	10.40	(0.40)	0.51
	Firm becoming stiff reddish brown silty CLAY. (HEAD)	17.60	(7.20)	-6.69
	Very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine and medium of mudstone and siltstone. (GLACIAL TILL)		(2.85)	

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Hole completed at target depth and backfilled with arisings and bentonite on completion. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2		Borehole No BH104 Page No. 3 of 3
Method: Cable Percussion	Date(s): 20/08/2021 - 23/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350495.94, 420788.59	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.91m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
20.00	SPT	50/285mm (7,8,11,15,15,9)		Very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine and medium of mudstone and siltstone. (GLACIAL TILL) *... Between 20.40m to 20.45m bgl: Sand and gravel recovered in base of SPT shoe.*	20.45		-9.54	▨	▨
20.00	B								
20.00	D								
				End of Borehole at 20.45m					

21 22 23 24 25 26 27 28 29 30

Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Hole completed at target depth and backfilled with arisings and bentonite on completion. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Borehole No
BH105
Page No. 1 of 3

Method: Cable Percussion	Date(s): 18/08/2021 - 19/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350418.01, 420761.60	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.42m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
0.10	ES	
0.10	PID	0.0ppm
0.40	D	
0.80	B	
0.80	PID	0.0ppm
1.20	SPT	N=14 (1,2,3,3,4,4)
1.20 - 1.65	B	
1.20 - 1.65	D	
1.20 - 1.65	D	
2.00	SPT	N=9 (1,1,2,2,2,3)
2.00 - 2.45	B	
2.00 - 2.45	D	
3.00 - 3.45	U	
3.00 - 3.45	U	(17,100%)
4.00	SPT	N=12 (1,2,2,3,3,4)
4.00 - 4.45	B	
4.00 - 4.45	D	
5.00	SPT	N=15 (2,3,3,3,4,5)
5.00 - 5.45	B	
5.00 - 5.45	D	
6.50 - 6.95	U	
6.50 - 6.95	U	(21,90%)
8.00	SPT	N=11 (1,2,2,2,4,3)
8.00 - 8.45	B	
8.00 - 8.45	D	
9.00 - 9.95	B	
9.50	SPT	N=12 (2,2,2,3,3,4)
9.50 - 9.95	D	

Stratum Description

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over firm dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is subangular to subrounded fine to coarse of mudstone and siltstone with occasional fragments of brick. (TOPSOIL)	0.30	(0.30)	10.12
Firm grey mottled orangish brown CLAY with occasional rootlets. (MADE GROUND)	0.65	(0.35)	9.77
Light brown silty SAND and GRAVEL. Gravel is subangular to rounded fine to coarse of mudstone, sandstone, siltstone and quartzite. (HEAD)	0.90	(0.25)	9.52
Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine and medium of mudstone. (HEAD)	2.50	(1.60)	7.92
Firm locally soft reddish brown CLAY. (HEAD)	5.50	(3.00)	4.92
Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine and medium of mudstone. (HEAD)	9.00	(3.50)	1.42
Firm becoming stiff silty CLAY. (HEAD)			

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.40m bgl. 3) Hole completed at target depth and installed with response zone from 3.00m to 20.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2			Borehole No BH105 Page No. 2 of 3
Method: Cable Percussion	Date(s): 18/08/2021 - 19/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350418.01, 420761.60	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.42m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
11.00	SPT	N=15 (2,3,2,4,4,5)
11.00 - 11.45	B	
11.00 - 11.45	D	
12.50	SPT	N=13 (2,3,3,3,3,4)
12.50 - 12.95	B	
12.50 - 12.95	D	
14.00	SPT	N=17 (2,2,4,4,4,5)
14.00 - 14.45	B	
14.00 - 14.45	D	
15.50	SPT	N=22 (3,3,4,5,6,7)
15.50 - 15.95	B	
15.50 - 15.95	D	
17.00	SPT	50/165mm (5,8,12,17,21)
17.00 - 17.45	B	
17.00 - 17.45	D	
18.50	SPT	50/265mm (7,9,11,14,14,11)
18.50 - 18.95	B	
18.50 - 18.95	D	

Stratum Description

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Firm becoming stiff silty CLAY. (HEAD)	15.50	(6.50)	-5.08
Medium dense brown silty fine and medium SAND with rare small pockets of silty clay. (HEAD)	16.10	(0.60)	-5.68
Firm reddish brown silty CLAY. (HEAD)	17.00	(0.90)	-6.58
Very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine and medium of mudstone and siltstone. (GLACIAL TILL)		(3.40)	

Depth scale: 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.40m bgl. 3) Hole completed at target depth and installed with response zone from 3.00m to 20.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2			Borehole No BH105 Page No. 3 of 3
Method: Cable Percussion	Date(s): 18/08/2021 - 19/08/2021	Logged By: RC		Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350418.01, 420761.60	Checked By: RS		Flush:
Hydrock Project No: C-19851	Ground Level: 10.42m OD			Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
20.00	SPT	50/245mm (8,11,12,12,13,13)		Very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine and medium of mudstone and siltstone. (GLACIAL TILL)	20.40		-9.98		
20.00 - 20.45	B			End of Borehole at 20.40m					
20.00 - 20.45	D								

Progress and Observations									Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.40m bgl. 3) Hole completed at target depth and installed with response zone from 3.00m to 20.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Borehole No BH106 Page No. 1 of 4

Method: Rotary Cored	Date(s): 16/08/2021 - 17/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350726.26, 421034.92	Checked By: RS	Flush: Air Mist
Hydrock Project No: C-19851	Ground Level: 13.16m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests Depth (m)	Type	Results	Mechanical Log TCR	SCR	RQD	If: Min Mean Max	Water-Strikes
	0.30	ES						
	0.30	PID	0.0ppm					
	0.60	PID	0.0ppm					
	1.20	SPT	N=8 (1,1,2,1,2,3)					
	1.20 - 1.65	B						
	1.20 - 1.65	D						
	1.20 - 1.65	D						
	2.00	SPT	N=7 (1,2,1,1,2,3)					
	2.00 - 2.45	B						
	2.00 - 2.45	D						
	2.00 - 2.45	D						
	3.00	SPT	N=9 (1,1,1,3,2,3)					
	3.00 - 3.45	B						
	3.00 - 3.45	D						
	4.00	SPT	N=5 (1,1,1,1,1,2)					
	4.00 - 4.45	B						
	4.00 - 4.45	D						
	5.00	SPT	N=10 (2,3,3,2,2,3)					
	5.00 - 5.45	B						
	5.00 - 5.45	D						
	6.50	SPT	N=21 (2,3,4,5,5,7)					
	6.50 - 6.95	B						
	6.50 - 6.95	D						
	8.00	SPT	N=15 (2,3,3,3,4,5)					
	8.00 - 8.45	B						
	8.00 - 8.45	D						
	9.50 - 9.95	U						
	9.50 - 9.95	U	(15,60%)					

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over firm dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is subangular to subrounded fine to coarse of mudstone with rare fragments of brick. (TOPSOIL)	0.40	(0.40)	12.76
Firm reddish brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone and siltstone. (GLACIAL TILL) *... Between 0.40m and 1.00m bgl: occasional root and light brown mottling present.*	2.50	(2.10)	10.66
Firm becoming stiff to very stiff with depth reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine and medium of mudstone, sandstone, siltstone and quartzite. (GLACIAL TILL) *... From 6.50m bgl: Becoming stiff.*			

Continued on Next Sheet

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
MI3	26/08	1700	32.50	21.00	110		Air Mist	red/grey

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Rotary cored follow on drilling from 20.45m to 32.50m bgl. 4) Hole completed at target depth and installed with response zone from 14.00m to 26.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2		Borehole No BH106 Page No. 2 of 4
Method: Rotary Cored	Date(s): 16/08/2021 - 17/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350726.26, 421034.92	Checked By: RS	Flush: Air Mist
Hydrock Project No: C-19851	Ground Level: 13.16m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests Depth (m)	Type	Results	Mechanical Log TCR	SCR	RQD	If: Min Mean Max	Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
									Firm becoming stiff to very stiff with depth reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine and medium of mudstone, sandstone, siltstone and quartzite. (GLACIAL TILL)					
	11.00	SPT	N=16 (2,2,3,4,4,5)							11				
	11.00 - 11.45	B												
	11.00 - 11.45	D												
										12				
	12.50	U	(14,100%)											
	12.50 - 12.95	U												
										13	(21.00)			
	14.00	SPT	N=20 (3,4,4,5,5,6)							14				
	14.00 - 14.45	B												
	14.00 - 14.45	D												
										15				
	15.50	SPT	N=14 (2,3,3,3,4,4)											
	15.50 - 15.95	B												
	15.50 - 15.95	D								16				
	17.00	SPT	N=25 (3,4,5,5,7,8)						*... From 17.00m bgl: Becoming very stiff.*	17				
	17.00 - 17.45	B												
	17.00 - 17.45	D												
										18				
	18.50	SPT	N=40 (4,6,7,10,11,12)											
	18.50 - 18.95	B												
	18.50 - 18.95	D								19				
										20				

Continued on Next Sheet

Progress and Observations										Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Rotary cored follow on drilling from 20.45m to 32.50m bgl. 4) Hole completed at target depth and installed with response zone from 14.00m to 26.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2			Borehole No BH106 Page No. 3 of 4
Method: Rotary Cored	Date(s): 16/08/2021 - 17/08/2021	Logged By: RC		Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350726.26, 421034.92	Checked By: RS		Flush: Air Mist
Hydrock Project No: C-19851	Ground Level: 13.16m OD			Scale: 1:50

Sample/Core Run (m)	Samples / Tests Depth (m)	Samples / Tests Type	Samples / Tests Results	Mechanical Log TCR	Mechanical Log SCR	Mechanical Log RQD	Mechanical Log If: Min Mean Max	Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
	20.00	SPT	50/85mm (11,12,24,26)						Firm becoming stiff to very stiff with depth reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine and medium of mudstone, sandstone, siltstone and quartzite. (GLACIAL TILL)					
	20.00 - 20.45	B												
	20.00 - 20.45	D												
23.50 - 25.00				77	35	7	0 30 80		Very weak dark red micaceous MUDSTONE with local interbedded grey siltstone. Discontinuities; Bedding fractures are very closely to medium spaced (60, 80, 100, 280mm) , sub horizontal (5-10°) rough, planar to undulating with local clay mearing up to 2mm, with loss of strength adjacent to fractures up to 2mm. (SINGLETON MUDSTONE MEMBER) *... Between 23.50m and 23.85m bgl: assumed zone of core loss due to weathered rock.* *... Between 23.85m and 23.90m bgl: NI as dark red and dark grey gravel of mudstone.* *... Between 24.10m and 24.20m bgl: NI as dark red and dark grey clayey gravel of mudstone.* *... Between 24.30m and 24.35m bgl: NI as dark red gravel of mudstone.* *... Between 24.50m and 24.55m bgl: NI as dark red gravel of mudstone.* *... Between 25.00m and 25.35m bgl: assumed zone of core loss due to weathered rock.* *... Between 25.40m and 25.60m bgl: Interbedded grey siltstone.* *... Between 26.35m and 26.40m bgl: NI as soft dark red sandy clay.*	23.50	(3.00)	-10.34		
	24.00	ES												
	24.45 - 24.65	C												
	24.45 - 24.65	C												
25.00 - 26.50				77	48	33	0 80 280							
	25.60 - 25.70	C												
	25.60 - 25.70	C												
	25.77 - 25.95	C												
	26.00 - 26.29	C												
26.50 - 28.00	26.00 - 26.29	C		100	60	18			Very weak dark grey SILTSTONE with local interbedded dark red MUDSTONE. Discontinuities; Bedding fractures are closely spaced (80, 90, 120, 150mm), sub horizontal (5-10°), rough and undulating with local clay smearing up to 1-2mm with local loss of strength adjacent to fractures up to 3-5mm. (SINGLETON MUDSTONE MEMBER) *... Between 26.50m and 27.10m bgl: NI as dark grey gravel.*	26.50	(1.50)	-13.34		
	27.35 - 27.50	C												
	27.35 - 27.50	C												
	27.70 - 27.83	C					20 100 270							
28.00 - 29.50				100	95	37			Very weak dark red MUDSTONE with local interbedded dark grey medium strong SILTSTONE. Discontinuities; Set 1: Bedding fractures are closely to medium spaced (60, 80, 100, 220mm), sub horizontal (5-10°) rough and undulating with local clay smearing up to 1mm and localised clay infilling of fractures up to 5mm. Loss of strength adjacent to fractures up to 2-3mm. Set 2: Joints are medium to widely spaced (170, 400, 900mm), sub vertical 60-85°), rough and smooth, undulating and stepped with local sandy silt smearing and loss of strength adjacent to fractures up to 5-10mm. (SINGLETON MUDSTONE MEMBER) *... Between 29.50m and 29.75m bgl: assumed zone of core loss due to weathered rock.*	28.00		-14.84		
	28.68	C												
	28.68 - 28.78	C												
	29.15 - 29.25	C												
	29.15 - 29.25	C												
29.50 - 31.00							0 60 150							

Continued on Next Sheet

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Rotary cored follow on drilling from 20.45m to 32.50m bgl. 4) Hole completed at target depth and installed with response zone from 14.00m to 26.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Borehole No BH106 Page No. 4 of 4

Method: Rotary Cored	Date(s): 16/08/2021 - 17/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350726.26, 421034.92	Checked By: RS	Flush: Air Mist
Hydrock Project No: C-19851	Ground Level: 13.16m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	If: Min Mean Max							
	30.60 - 30.81	C		83	30	10			Very weak dark red MUDSTONE with local interbedded dark grey medium strong SILTSTONE. Discontinuities; Set 1: Bedding fractures are closely to medium spaced (60, 80, 100, 220mm), sub horizontal (5-10°) rough and undulating with local clay smearing up to 1mm and localised clay infilling of fractures up to 5mm. Loss of strength adjacent to fractures up to 2-3mm. Set 2: Joints are medium to widely spaced (170, 400, 900mm), sub vertical 60-85°), rough and smooth, undulating and stepped with local sandy silt smearing and loss of strength adjacent to fractures up to 5-10mm. (SINGLETON MUDSTONE MEMBER) *... Between 30.30m and 30.38m bgl: NI as dark red and dark grey gravel of mudstone.* *... Between 30.50m and 30.58m bgl: NI as dark red and dark grey gravel of mudstone.* *... Between 30.70m and 30.80m bgl: NI as dark red and dark grey gravel of mudstone.* *... Between 31.00m and 31.30m bgl: NI as dark red and dark grey gravel of mudstone.* *... Between 31.60 to 31.70: NI as dark red silty gravel of mudstone.*	32.50	(4.50)	-19.34		
31.00 - 32.50	31.65 - 31.81 31.65 - 31.81	C C		100	55	36								

End of Borehole at 32.50m

Progress and Observations									Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) Rotary cored follow on drilling from 20.45m to 32.50m bgl. 4) Hole completed at target depth and installed with response zone from 14.00m to 26.00m bgl. 4) No visual or olfactory evidence of contamination.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Borehole No BH107 Page No. 1 of 1

Method: Cable Percussion	Date(s): 26/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350362.05, 420631.57	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 10.90m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Depth (m)	Type	Results							
0.10	ES			ASPHALT HARDSTANDING (BITUMINOUS MATERIAL)	0.10	(0.10)	10.80	▩	▒
0.20	ASB			Grey angular to subrounded sandy fine to coarse GRAVEL of limestone and sandstone with occasional pockets of firm greenish grey sandy CLAY. (MADE GROUND)	0.30	(0.20)	10.60	▩	▨
				Strong light grey reinforced CONCRETE comprising 70% aggregate of angular to subangular fine to coarse gravels of quartzite, limestone and mudstone. (MADE GROUND)	1.20	(0.90)	9.70	▩	▨
				End of Borehole at 1.20m					

Progress and Observations									Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand pit to 0.30m bgl followed by breaking out of concrete obstruction with an excavator. 2) Unable to probe base of concrete at 1.20m bgl, pit backfilled with arisings and finished with cold lay macadam. 3) No visible or olfactory evidence of contamination. 4) Groundwater seepage at 0.60m bgl which continued to fill pit.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Borehole No
BH107A
Page No. 1 of 3

Method: Cable Percussion	Date(s): 26/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350375.21, 420689.93	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 11.05m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
0.40	ES	
1.20	SPT	N=15 (1,2,3,3,4,5)
1.20 - 1.65	B	
1.20 - 1.65	D	
2.00	SPT	N=11 (1,2,2,3,3,3)
2.00 - 2.45	B	
2.00 - 2.45	D	
3.00	SPT	N=17 (2,3,3,4,5,5)
3.00 - 3.45	B	
3.00 - 3.45	D	
4.00	SPT	N=8 (1,2,1,2,2,3)
4.00 - 4.45	B	
4.00 - 4.45	D	
5.00	SPT	N=12 (2,2,3,3,3,3)
5.00 - 5.45	B	
5.00 - 5.45	D	
6.50 - 6.95	U	
6.50 - 6.95	U	(17,100%)
8.00	SPT	N=23 (4,4,5,5,6,7)
8.00 - 8.45	B	
8.00 - 8.45	B	
8.00 - 8.45	D	
9.50	SPT	N=10 (1,1,2,2,3,3)
9.50 - 9.95	B	
9.50 - 9.95	D	

Stratum Description

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over firm dark brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.15	(0.15)	10.90
Stiff dark brown slightly sandy slightly gravelly CLAY with occasional rootlets. Gravel is angular to subrounded fine to coarse of various lithologies including brick, concrete with rare fragments of glass. (MADE GROUND) *... At 0.30m bgl: one piece of laboratory confirmed hard cement type asbestos (40 x 70mm)*	0.90	(0.75)	10.15
Firm locally soft grey mottled light brown slightly sandy CLAY. (MADE GROUND)	1.40	(0.50)	9.65
Firm light yellowish brown mottled light grey slightly sandy CLAY. (HEAD)	1.90	(0.50)	9.15
Firm locally stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone, siltstone and sandstone. (HEAD)	8.90	(7.00)	2.15
Stiff locally firm grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone. (HEAD)	9.30	(0.40)	1.75
Loose reddish brown silty fine and medium SAND. (HEAD)	9.60	(0.30)	1.45
Firm reddish brown silty CLAY. (HEAD)			

Legend | Instrumentation / Backfill

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

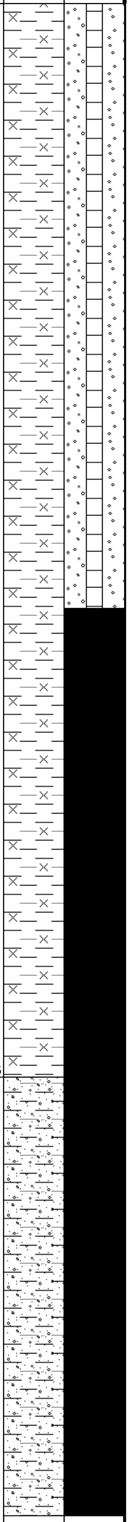
General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.34m bgl. 3) No visual or olfactory evidence of contamination noted. 4) Hole completed at target depth and installed with response zone from 5.00m to 14.00m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Borehole No BH107A Page No. 2 of 3

Method: Cable Percussion	Date(s): 26/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350375.21, 420689.93	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 11.05m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Depth (m)	Type	Results					
				Firm reddish brown silty CLAY. (HEAD)	17.10	(7.50)	-6.05
11.00	SPT	N=14 (2,3,3,3,4,4)					
11.00 - 11.45	B						
11.00 - 11.45	D						
12.50	SPT	N=11 (2,2,2,3,3,3)					
12.50 - 12.95	B						
12.50 - 12.95	D						
14.00	SPT	N=8 (1,1,2,2,2,2)					
14.00 - 14.45	B						
14.00 - 14.45	D						
15.50	SPT	N=13 (2,3,2,3,4,4)					
15.50 - 15.95	B						
15.50 - 15.95	D						
17.00	SPT	N=23 (2,4,4,5,7,7)					
17.00 - 17.45	B						
17.00 - 17.45	D						
				Stiff becoming very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. (GLACIAL TILL) *... Between 17.10m to 17.40m bgl: Firm clay.*		(3.24)	
18.50	SPT	50/280mm (6,8,11,14,15,10)					
18.50 - 18.95	B						
18.50 - 18.95	D						



Progress and Observations									Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.34m bgl. 3) No visual or olfactory evidence of contamination noted. 4) Hole completed at target depth and installed with response zone from 5.00m to 14.00m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2		Borehole No BH107A Page No. 3 of 3
Method: Cable Percussion	Date(s): 26/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350375.21, 420689.93	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 11.05m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Depth (m)	Type	Results							
20.00 20.00 - 20.45 20.00 - 20.45	SPT B D	50/190mm (9,10,13,18,19)		Stiff becoming very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. (GLACIAL TILL)	20.34		-9.29		
				End of Borehole at 20.34m					

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Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.34m bgl. 3) No visual or olfactory evidence of contamination noted. 4) Hole completed at target depth and installed with response zone from 5.00m to 14.00m bgl.

Logged in general accordance with BS5930:2015

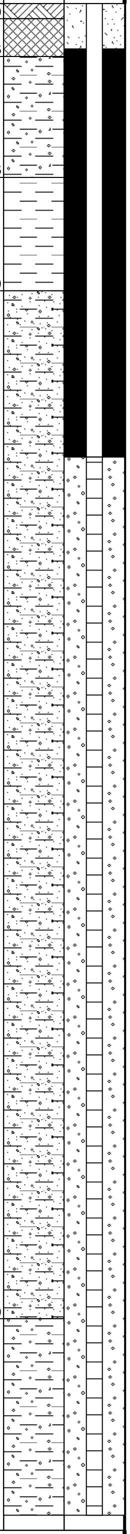
Hydrock	Project: Garth Wymott 2	Borehole No BH108 Page No. 1 of 2

Method: Cable Percussion	Date(s): 31/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350575.03, 420752.76	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 11.40m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
0.50	HSV	59kPa
1.20	SPT	N=7 (1,1,1,2,2,2)
1.20	B	
1.20	D	
2.00	SPT	N=12 (1,2,2,3,3,4)
2.00	B	
2.00	D	
2.00 - 2.45	D	
3.00	SPT	N=8 (1,1,1,2,3,2)
3.00	B	
3.00	D	
4.00	U	(12,100%)
4.00 - 4.45	U	
5.00	SPT	N=9 (1,2,2,2,2,3)
5.00	B	
5.00	D	
6.50	SPT	N=13 (2,2,3,3,3,4)
6.50	B	
6.50	D	
8.00	SPT	N=10 (2,3,3,2,2,3)
8.00	B	
8.00	D	
9.50	SPT	N=10 (1,1,1,2,3,4)
9.50	B	
9.50	D	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over firm dark brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.10	(0.10)	11.30
Firm orangish brown sandy gravelly CLAY. Gravel is very angular to subangular fine to coarse of brick, coal and charcoal. (MADE GROUND)	0.35	(0.25)	11.05
Firm locally soft brown slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of brick. (HEAD)	1.15	(0.80)	10.25
Soft reddish brown mottled grey CLAY. (HEAD)	1.90	(0.75)	9.50
Firm locally soft reddish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse of mudstone and siltstone. (HEAD)	8.70	(6.80)	2.70
Firm sandy slightly gravelly CLAY. Gravel is angular to rounded, fine to coarse of mudstone and siltstone. (HEAD)		(1.40)	



Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling progressed from 1.20m to target depth of 17.45m bgl. 3) No visual or olfactory evidence of contamination noted. 4) Installed with response zone from 9.00m to 12.00m bgl.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Borehole No
BH108
Page No. 2 of 2

Method: Cable Percussion	Date(s): 31/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350575.03, 420752.76	Checked By: RS	Flush:
Hydrock Project No: C-19851	Ground Level: 11.40m OD		Scale: 1:50

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
11.00	SPT	N=10 (2,2,2,2,3,3)	
11.00	B		
11.00	D		
12.50	SPT	N=9 (1,2,2,2,2,3)	
12.50	B		
12.50	D		
14.00	SPT	N=13 (2,2,3,3,3,4)	
14.00	B		
14.00	D		
15.50	SPT	N=27 (3,4,5,7,7,8)	
15.50	B		
15.50	D		
17.00	SPT	N=42 (5,6,7,10,11,14)	
17.00	B		
17.00	D		

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Firm sandy slightly gravelly CLAY. Gravel is angular to rounded, fine to coarse of mudstone and siltstone. (HEAD)	10.10	(0.40)	1.30
Reddish brown silty fine and medium SAND. (HEAD)	10.50		0.90
Firm locally soft reddish brown silty CLAY. (HEAD)		(4.40)	
Stiff becoming very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. (GLACIAL TILL)	14.90	(2.55)	-3.50
End of Borehole at 17.45m	17.45		-6.05

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling progressed from 1.20m to target depth of 17.45m bgl. 3) No visual or olfactory evidence of contamination noted. 4) Installed with response zone from 9.00m to 12.00m bgl.

Logged in general accordance with BS5930:2015

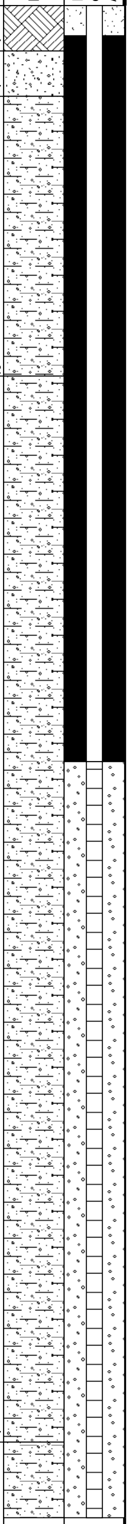
Hydrock	Project: Garth Wymott 2	Borehole No BH109 Page No. 1 of 3	
Method: Cable Percussion	Date(s): 07/09/2021 - 09/09/2021	Logged By: RS	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350614.69, 421000.15	Checked By: AC	Flush:
Hydrock Project No: C-19851	Ground Level: 11.87m OD		Scale: 1:50

Samples / Tests

Depth (m)	Type	Results
0.60 - 0.90	B	
0.70	ES	
1.20	SPT	N=15 (1,2,2,3,4,6)
1.20 - 1.65	B	
1.20 - 1.65	D	
1.20 - 1.65	U	
2.00 - 2.45	U	
2.00 - 2.45	U	(23,100%)
3.00	SPT	N=13 (2,2,3,3,3,4)
3.00 - 3.45	B	
3.00 - 3.45	D	
4.00	SPT	N=11 (1,2,2,3,3,3)
4.00 - 4.45	B	
4.00 - 4.45	D	
5.00	SPT	N=12 (2,2,2,3,3,4)
5.00 - 5.45	B	
5.00 - 5.45	D	
6.50	SPT	N=9 (1,2,2,2,2,3)
6.50 - 6.95	B	
6.50 - 6.95	D	
8.00	SPT	N=10 (1,1,2,3,2,3)
8.00 - 8.45	B	
8.00 - 8.45	D	
9.50	SPT	N=16 (2,3,3,4,4,5)
9.50 - 9.95	B	
9.50 - 9.95	D	

Stratum Description

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over soft to firm dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular to subrounded fine to coarse of sandstone and quartzite. (TOPSOIL)	0.30	(0.30)	11.57
Light brown slightly gravelly silty fine to coarse SAND. Gravel is subangular to subrounded fine and medium of mudstone and siltstone. (HEAD)	0.60	(0.30)	11.27
Stiff reddish brown slightly sandy slightly gravelly micaceous CLAY. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone and quartzite. (HEAD)	2.45	(1.85)	9.42
Firm locally soft dark brown sandy slightly gravelly CLAY with rare very thin bands of dark brown clayey sand. Gravel is subangular to subrounded fine and medium of mudstone and siltstone. (HEAD) *... Between 8.00m and 8.50m bgl: Thin bands of dark brown clayey fine to coarse sand.*	9.50	(7.05)	2.37
Firm locally soft dark brown slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. (HEAD)			



Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) No visual or olfactory evidence of contamination noted. 4) Hole completed at target depth and installed with response zone from 5.00m to 13.00m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2		Borehole No BH109 Page No. 2 of 3
Method: Cable Percussion	Date(s): 07/09/2021 - 09/09/2021	Logged By: RS	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350614.69, 421000.15	Checked By: AC	Flush:
Hydrock Project No: C-19851	Ground Level: 11.87m OD		Scale: 1:50

Samples / Tests		
Depth (m)	Type	Results
11.00	SPT	N=17 (3,2,4,4,4,5)
11.00 - 11.45	B	
11.00 - 11.45	D	
12.50	SPT	N=5 (1,1,1,1,1,2)
12.50 - 12.95	B	
12.50 - 12.95	D	
14.00	SPT	N=11 (2,2,3,3,3,2)
14.00 - 14.45	B	
14.00 - 14.45	D	
15.50	SPT	N=14 (3,3,3,3,4,4)
15.50 - 15.95	B	
15.50 - 15.95	D	
15.50 - 15.95	U	
17.00	SPT	N=13 (2,3,3,3,4,3)
17.00 - 17.45	B	
17.00 - 17.45	D	
18.50 - 18.95	U	
18.50 - 18.95	U	(27,100%)

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Firm locally soft dark brown slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. (HEAD) *... Between 11.00m and 11.45m bgl: Rare 20mm bands of dark brown clayey fine to coarse sand.* *... Between 12.50m and 13.00m bgl: Band of dark brown gravelly clayey fine to coarse sand.*	14.00	(4.50)	-2.13
Firm dark brown silty CLAY. (HEAD)	18.50	(4.50)	-6.63
Very stiff reddish brown slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone, sandstone and quartzite. (GLACIAL TILL)		(1.95)	

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) No visual or olfactory evidence of contamination noted. 4) Hole completed at target depth and installed with response zone from 5.00m to 13.00m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2		Borehole No BH109 Page No. 3 of 3
Method: Cable Percussion	Date(s): 07/09/2021 - 09/09/2021	Logged By: RS	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350614.69, 421000.15	Checked By: AC	Flush:
Hydrock Project No: C-19851	Ground Level: 11.87m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Depth (m)	Type	Results							
20.00 20.00 - 20.45 20.00 - 20.45	SPT B D	N=36 (3,4,7,8,10,11)		Very stiff reddish brown slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone, sandstone and quartzite. (GLACIAL TILL)	20.45		-8.58	▨	■
				End of Borehole at 20.45m					

Progress and Observations									Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Cable percussive drilling from 1.20m to 20.45m bgl. 3) No visual or olfactory evidence of contamination noted. 4) Hole completed at target depth and installed with response zone from 5.00m to 13.00m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2		Borehole No WS101 Page No. 1 of 1
Method: Window Sampler	Date(s): 23/09/2021	Logged By: RS	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350487.40, 420749.55	Checked By: AC	Rig: Dando Terrier
Hydrock Project No: C-19851	Ground Level: 10.51m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results	
			0.10	ES		
			0.35 0.35	ES PID	 0.2ppm	
			0.60 - 0.80	B		
1.20 - 2.00	87mm	100%	1.20	SPT	N=8 (1,2,2,2,2,2)	
			1.20 - 1.65	D		
			1.20 - 2.00	B		
2.00 - 3.00	77mm	100%	2.00	SPT	N=14 (2,3,3,3,4,4)	
			2.00 - 2.45	D		
3.00 - 4.00	67mm	0%	3.00	SPT	N=18 (3,3,4,4,5,5)	
4.00 - 5.00	57mm	100%	4.00	SPT	N=38 (7,9,9,9,10,10)	
			5.00	SPT	N=28 (4,6,6,6,8,8)	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Soft dark sandy CLAY with rare rootlets. (TOPSOIL)	0.25	(0.25)	10.26		
Dark brown gravelly very clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse of shale, coal and brick. (MADE GROUND)	0.60	(0.35)	9.91		
Firm orangish brown mottled grey sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone. (HEAD) *... Between 0.60m and 1.20m bgl: Occasional bands of greyish brown clayey sand.*	1.20	(0.60)	9.31		
Firm becoming stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine and medium of mudstone and siltstone. (HEAD) *... Between 4.00m and 4.45m bgl: Becomes very stiff.*	5.45	(4.25)	5.06		
End of Borehole at 5.45m					

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Dynamic windowless sampling drilling from 1.20m to 5.45m bgl. 3) No visual or olfactory evidence of contamination. 4) Backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Borehole No
WS102
Page No. 1 of 1

Method: Window Sampler	Date(s): 23/08/2021	Logged By: RS	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350589.70, 420821.22	Checked By: AC	Rig: Dando Terrier
Hydrock Project No: C-19851	Ground Level: 11.84m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results	
			0.20 - 0.50	B		
			0.20 - 0.50	B		
			0.30 - 0.40	ES		
			0.30	PID	0.1ppm	
			0.80	D		
1.20 - 2.00	87mm	70%	1.20	SPT	N=5 (4,2,0,1,2,2)	▼
			1.20 - 1.65	D		
			1.30	ES		
			1.65	D		
			1.65	D		
2.00 - 3.00	77mm	45%	2.00	SPT	N=0 (0,0,0,0,0,0)	
			2.00 - 2.45	D		
			2.00 - 2.45	D		
3.00 - 4.00	67mm	70%	3.00	SPT	N=15 (3,4,4,3,4,4)	
			3.00 - 3.45	D		
			3.00 - 3.45	D		
4.00 - 5.00	57mm	100%	4.00	SPT	N=16 (4,4,4,4,4,4)	
			4.00 - 4.45	D		
			5.00	SPT	N=17 (3,4,3,4,5,5)	
			5.00 - 5.45	D		

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Grass over firm dark brown and orangish brown sandy gravelly CLAY with medium cobble content. Gravel is angular to subangular of concrete, brick, sandstone, mudstone, coal and limestone with rare fragments of timber, metal and plastic. Cobbles are subangular of concrete. (MADE GROUND- POND BACKFILL)	0.70	(0.70)	11.14		
Soft orangish brown and greyish brown sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone, coal and brick with rare fragments of timbers. Cobbles are subangular to subrounded of brick and mudstone. (MADE GROUND- POND BACKFILL)	1.40	(0.70)	10.44		
Very soft greyish brown sandy CLAY with a moderate organic (humic) odour. (NATURAL- POND INFILL) *... Between 1.70m and 2.00m bgl: No recovery.*	2.00	(0.60)	9.84		
Very soft black and dark brown peaty CLAY with a moderate organic (humic) odour. (NATURAL- POND INFILL) *... Between 2.45m and 3.20m bgl: Limited recovery.*	3.20	(1.20)	8.64		
Firm light brown sandy slightly gravelly CLAY. Gravel is subangular fine of mudstone and siltstone. (GLACIAL TILL)	4.00	(0.80)	7.84		
Stiff reddish brown sandy slightly gravelly CLAY. Gravel is subangular fine of mudstone and siltstone. (GLACIAL TILL)	5.45	(1.45)	6.39		
End of Borehole at 5.45m					

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Dynamic windowless sampling drilling from 1.20m to 5.45m bgl. 3) No visual or olfactory evidence of contamination. 4) Installed on completion with a response zone from 0.50m to 3.00m bgl.

Logged in general accordance with BS5930:2015

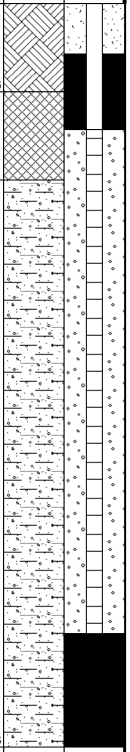
Hydrock

Project: Garth Wymott 2

Borehole No
WS103
Page No. 1 of 1

Method: Window Sampler	Date(s): 25/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350222.33, 420184.91	Checked By: RS	Rig: Dando Terrier
Hydrock Project No: C-19851	Ground Level: 14.21m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results					
			0.20	ES			Grass over firm dark brown sandy slightly gravelly CLAY with frequent rootlets. Gravel is angular to subrounded fine to coarse of various lithologies including brick, concrete and coal. (TOPSOIL)	0.35	(0.35)	13.86
			0.20	ES						
			0.30 - 0.70	B						
			0.35 - 0.70	B			Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone, siltstone, brick and coal. (MADE GROUND)	0.70	(0.35)	13.51
			0.50	ES						
							Firm becoming very stiff reddish and orangish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and sandstone. (GLACIAL TILL)	2.95	(2.25)	11.26
			1.00	ES						
			1.00	ES						
1.20 - 2.00	87mm	100%	1.20	SPT	N=13 (2,3,2,3,4,4)					
			1.20 - 1.65	D						
			1.20 - 1.65	D						
			1.20 - 2.00	B						
			1.20 - 2.00	B						
2.00 - 3.00	77mm	100%	2.00	SPT	N=32 (5,5,6,8,8,10)					
			2.00 - 2.45	D						
			2.50 - 2.95	D						
							End of Borehole at 2.95m			
			3.00	SPT	N=35 (5,5,7,9,9,10)					



General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Dynamic windowless sampling drilling from 1.20m to 2.95m bgl. 3) Refusal of sampling barrel at 2.50m and SPT advanced to 2.95m bgl. 4) No visual or olfactory evidence of contamination. 5) Installed on completion with a response zone from 0.50m to 2.50m bgl.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Borehole No
WS104
Page No. 1 of 1

Method: Window Sampler	Date(s): 24/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350676.83, 420952.61	Checked By: RS	Rig: Dando Terrier
Hydrock Project No: C-19851	Ground Level: 12.48m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results					
							Grass over firm dark brown sandy slightly gravelly CLAY with frequent rootlets. Gravel us subangular, fine and medium of brick. (TOPSOIL)	0.20	(0.20)	12.28
			0.50 0.50	ES ES			Firm dark brownish grey slightly gravelly CLAY. Gravel is angular, medium to coarse of brick and coal. (MADE GROUND)	0.80	(0.60)	11.68
							Light brown fine and medium SAND. (HEAD)	0.90	(0.10)	11.58
							Soft light brownish grey very sandy CLAY. (HEAD)	1.00	(0.10)	11.48
1.20 - 2.00	87mm	100%	1.20	SPT	N=8 (1,1,2,2,2,2)		Soft reddish brown sandy CLAY. (HEAD)	1.40	(0.40)	11.08
			1.40 - 1.60	B			Firm reddish brown silty CLAY. (HEAD)	1.60	(0.20)	10.88
2.00 - 3.00	77mm	100%	2.00 2.00 - 2.45	SPT D	N=10 (2,2,2,3,2,3)		Firm becoming stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mudstone and siltstone. (GLACIAL TILL)			
3.00 - 4.00	67mm	100%	3.00 3.00 - 3.45	SPT D	N=15 (2,2,3,4,4,4)				(3.85)	
4.00 - 5.00	57mm	100%	4.00	SPT	N=20 (2,3,3,5,6,6)					
			5.00	SPT	N=27 (4,4,6,7,7,7)			5.45		7.03
							End of Borehole at 5.45m			

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Dynamic windowless sampling drilling from 1.20m to 5.45m bgl. 3) No visual or olfactory evidence of contamination. 4) Borehole completed at target depth and installed with response zone from 0.50m to 2.50m bgl.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Borehole No
WS105
Page No. 1 of 1

Method: Window Sampler	Date(s): 23/08/2021	Logged By: RS	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350620.30, 420832.27	Checked By: AC	Rig: Dando Terrier
Hydrock Project No: C-19851	Ground Level: 12.57m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results	
			0.30	ES		
			0.30 - 0.50	ES		
			0.30	PID	0.1ppm	
			0.80	D		
1.20 - 2.00	87mm	100%	1.20	SPT	N=12 (2,2,3,3,3,3)	
			1.20 - 1.65	D		
			1.20 - 1.65	D		
			1.30	ES		
			1.80	D		
2.00 - 3.00	77mm	100%	2.00	SPT	N=22 (3,4,5,5,6,6)	
			2.00 - 2.45	D		
			2.00 - 2.45	D		
			2.80	D		
3.00 - 4.00	67mm	100%	3.00	SPT	N=16 (3,4,4,4,4,4)	
			3.00 - 3.45	D		
4.00 - 5.00	57mm	100%	4.00	SPT	N=20 (3,3,4,5,5,6)	
			4.00 - 4.45	D		
			5.00	SPT	N=20 (4,4,4,5,5,6)	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Grass over stiff dark brown sandy gravelly desiccated CLAY with occasional rootlets. Gravel is subangular fine of brick and coal. (TOPSOIL)	0.20	(0.20)	12.37		
Firm dark brown sandy gravelly CLAY with low cobble content. Gravel is angular to subangular fine to coarse of clinker, sandstone, coal, brick, mudstone and limestone. Cobbles are subangular of limestone. (MADE GROUND)	0.70	(0.50)	11.87		
Firm reddish brown mottled greyish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine and medium of sandstone and mudstone. (GLACIAL TILL)	1.20	(0.50)	11.37		
Stiff reddish brown mottled light grey and orangish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine and medium and mudstone and siltstone. (GLACIAL TILL) *... From 1.20m bgl: no visible roots or rootlets associated with nearby mature tree.*	2.00	(0.80)	10.57		
Stiff reddish brown mottled grey slightly sandy CLAY. Gravel is subangular fine of mudstone. (GLACIAL TILL)	5.45	(3.45)	7.12		
End of Borehole at 5.45m					

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Dynamic windowless sampling drilling from 1.20m to 5.45m bgl. 3) No visual or olfactory evidence of contamination. 4) Backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Borehole No
WS106
Page No. 1 of 1

Method: Window Sampler	Date(s): 24/08/2021	Logged By: RS	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350641.19, 420643.97	Checked By: AC	Rig: Dando Terrier
Hydrock Project No: C-19851	Ground Level: 11.87m OD		Scale: 1:30

Sample Run Info			Testing		
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results
			0.30 - 0.50	ES	
			0.30	PID	0.1ppm
			0.40 - 0.60	B	
			0.60 - 1.00	ES	
1.20 - 2.00	87mm	100%	1.20	SPT	N=9 (2,2,2,2,2,3)
			1.20 - 1.65	D	
			1.60 - 2.20	B	
2.00 - 3.00	77mm	60%	2.00	SPT	N=11 (2,3,3,2,3,3)
			2.00 - 2.45	D	
			2.00 - 2.45	D	
3.00 - 4.00	67mm	60%	3.00	SPT	N=16 (3,3,4,4,4,4)
4.00 - 5.00	57mm	70%	4.00	SPT	N=14 (3,3,3,3,4,4)
			5.00	SPT	N=19 (4,4,4,5,5,5)

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over soft dark brown sandy slightly gravelly CLAY with rare rootlet. (TOPSOIL)	0.15	(0.15)	11.72
Dark brown and orangish brown sandy gravelly CLAY with low cobble content. Gravel is angular to subangular fine to coarse of coal, brick, slate, sandstone, mudstone and quartzite. Cobbles are subangular of brick. (MADE GROUND)	1.30	(1.15)	10.57
Loose dark orange sandy slightly clayey subangular fine and medium GRAVEL of coal and clinker. Low cobble content of subangular brick. (MADE GROUND)	1.60	(0.30)	10.27
Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to mudstone and siltstone. (HEAD)	2.50	(0.90)	9.37
Medium dense light brown silty fine to coarse SAND. (HEAD) *... Between 3.00m and 3.30m bgl: Band of firm reddish brown sandy slightly gravelly clay.* *... Between 4.00m and 4.45m bgl: Band of firm reddish brown sandy slightly gravelly clay.*	5.45	(2.95)	6.42
End of Borehole at 5.45m			

General Remarks:
1) Hand dug inspection pit from ground level to 1.20m bgl. 2) Dynamic windowless sampling drilling from 1.20m to 5.45m bgl. 3) No visual or olfactory evidence of contamination. 4) Backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Borehole No WS107 Page No. 1 of 1

Method: Window Sampler	Date(s): 25/08/2021	Logged By: RC	Drilled By: DMW Drilling
Client: Ministry of Justice	Co-ords: 350271.17, 420725.53	Checked By: RS	Rig: Hand dug
Hydrock Project No: C-19851	Ground Level: 11.10m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
							Grass over firm dark brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.05	(0.05)	11.05	▨	▨
			0.30 0.30	ES ES			Firm dark brown slightly sandy slightly gravelly CLAY with occasional rootlets and medium cobble content. Gravel is very angular to subangular fine to coarse of brick, concrete and limestone. Cobbles are subangular of concrete. (MADE GROUND)	0.35	(0.30)	10.75	▨	▨
							End of Borehole at 0.35m					

General Remarks:
1) Hand dug inspection pit from ground level to 0.35m bgl. Pit terminated due to presence of concrete kerb obstruction and very compacted soils 2) Backfilled with arisings. 3) No visual or olfactory evidence of contamination noted.

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR101
Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350281.79, 420768.60	Stability: Stable	Dimensions: 1.60m × 0.60m
Hydrock Project No: C-19851	Ground Level: 10.81m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over dark brown gravelly silty fine to coarse SAND with rare rootlets. Gravel is angular to subangular fine to coarse of coal, limestone, mudstone and quartzite with rare fragments of brick. (TOPSOIL)	0.30	(0.30)	10.51	▨
0.40 0.40 - 0.60 0.55 0.55	ES ES ASB ES			Dark brown and dark grey sandy ashy angular to subangular fine to coarse GRAVEL of limestone, sandstone, brick, coal and clinker. (MADE GROUND) *... At 0.55m bgl: one piece of laboratory confirmed hard cement type asbestos (70 x 100mm).*	0.60	(0.30)	10.21	▩
0.80	CBR	1.5%		Dark grey sandy slightly gravelly CLAY. Gravel is subangular fine to medium of coal and mudstone. (HEAD)	0.80	(0.20)	10.01	▦

Base of Excavation at 0.80m

General Remarks:
1) Machine dug trial pit from ground level to 0.80m bgl. 2) LWD test undertaken at 0.80m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2			Trialpit No CBR102 Page No. 1 of 1
Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC	
Client: Ministry of Justice	Co-ords: 350266.10, 420899.92	Stability: Stable	Dimensions: 0.30m 0.30m	Scale: 1:25
Hydrock Project No: C-19851	Ground Level: 11.99m OD	Plant: Hand dug		

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over dark brown gravelly silty fine to coarse SAND with rare rootlets and low cobble content. Gravel is angular to subangular fine to coarse of mudstone, siltstone, coal, sandstone, brick and slag. Cobbles are subangular of sandstone. (MADE GROUND)	0.20	(0.20)	11.79	▨
0.40	CBR	3.8%		Stiff dark grey slightly sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine of mudstone and siltstone. (REWORKED NATURAL) (MADE GROUND)	0.40	(0.20)	11.59	▨
				Base of Excavation at 0.40m				

General Remarks:
1) Hand dug trial pit from ground level to 0.40m bgl. 2) LWD test undertaken at 0.40m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Project: Garth Wymott 2

Trialpit No
CBR103
Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350489.50, 420975.81	Stability: Stable	Dimensions: 1.60m 0.60m
Hydrock Project No: C-19851	Ground Level: 10.75m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
0.20	ES		
0.40	CBR	1.6%	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Grass over soft dark brown mottled orangish brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine and medium of mudstone and siltstone. (TOPSOIL)	0.30	(0.30)	10.45	
Firm orangish brown mottled grey sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine and medium of mudstone. (HEAD)	0.40	(0.10)	10.35	

Base of Excavation at 0.40m

General Remarks:
1) Machine dug trial pit from ground level to 0.40m bgl. 2) LWD test undertaken at 0.40m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No

CBR104

Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350650.33, 421021.00	Stability: Stable	Dimensions: 1.60m 0.60m
Hydrock Project No: C-19851	Ground Level: 11.97m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine and medium of mudstone and quartzite with rare fragments of brick. (TOPSOIL)	0.35	(0.35)	11.62	▨
0.45	CBR	1.2%		Firm light grey sandy desiccated CLAY. (HEAD)	0.45	(0.10)	11.52	▨

Base of Excavation at 0.45m

General Remarks:
1) Machine dug trial pit from ground level to 0.45m bgl. 2) LWD test undertaken at 0.45m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR105
Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350722.93, 420934.27	Stability: Stable	Dimensions: 1.60m × 0.60m
Hydrock Project No: C-19851	Ground Level: 13.32m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sandy CLAY with occasional rootlets. (TOPSOIL)	0.15	(0.15)	13.17	▨
0.50	CBR	1.0%		Firm reddish brown mottled grey sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone and sandstone. (GLACIAL TILL)	0.50	(0.35)	12.82	▒
				Base of Excavation at 0.50m				

General Remarks:
1) Machine dug trial pit from ground level to 0.50m bgl. 2) LWD test undertaken at 0.50m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No

CBR105A

Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350721.58, 420932.80	Stability: Stable	Dimensions: 1.60m × 0.60m
Hydrock Project No: C-19851	Ground Level: 13.32m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sand CLAY with occasional rootlets. (TOPSOIL)	0.25	(0.25)	13.07	▨
				Soft to firm greyish brown and reddish brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine and medium of brick and mudstone. (MADE GROUND)	0.55	(0.30)	12.77	▩
0.60 0.60	ES ES			Black sandy ashy GRAVEL. Gravel is subangular fine and medium of coal, brick and mudstone. (MADE GROUND)	0.65	(0.15)	12.67	▩

Base of Excavation at 0.65m

General Remarks:
1) Machine dug trial pit from ground level to 0.65m bgl. 2) Position moved 1.00m south west due to presence of localised Made Ground. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Project: Garth Wymott 2			Trialpit No CBR106 Page No. 1 of 1
Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350662.55, 420862.28	Stability: Stable	Dimensions: 1.60m 0.60m
Hydrock Project No: C-19851	Ground Level: 13.14m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown very sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular to subrounded fine to coarse of mudstone and quartzite. (TOPSOIL)	0.45	(0.45)	12.69	
0.47 0.50	D CBR	 1.6%		Firm orangish brown mottled grey sandy slightly gravelly CLAY. Gravel is subangular fine of mudstone. (GLACIAL TILL)	0.50	(0.05)	12.64	

Base of Excavation at 0.50m

General Remarks:
1) Machine dug trial pit from ground level to 0.50m bgl. 2) LWD test undertaken at 0.50m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No

CBR107

Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350524.07, 420919.67	Stability: Stable	Dimensions: 1.60m × 0.60m
Hydrock Project No: C-19851	Ground Level: 10.34m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular to subrounded fine and medium of mudstone and quartzite with rare fragments of brick. (TOPSOIL)	0.35	(0.35)	9.99	▨
0.45	CBR	1.9%		Soft light grey mottled orangish brown sandy CLAY with rare rootlets. (HEAD)	0.45	(0.10)	9.89	▨
				Base of Excavation at 0.45m				

General Remarks:
1) Machine dug trial pit from ground level to 0.45m bgl. 2) LWD test undertaken at 0.45m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR108
Page No. 1 of 1

Method: Trial Pit
Date(s): 25/08/2021
Logged By: RS
Checked By: AC
Client: Ministry of Justice
Co-ords: 350445.43, 420873.84
Stability: Stable
Dimensions: 1.60m × 0.60m
Scale: 1:25
Hydrock Project No: C-19851
Ground Level: 10.66m OD
Plant: JCB 3CX

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft to firm dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular to subrounded fine and medium of mudstone and quartzite with rare fragments of brick. (TOPSOIL)	0.45	(0.45)	10.21	▨
0.55	CBR	0.7%		Firm greyish brown sandy CLAY with rare rootlets. (HEAD)	0.55	(0.10)	10.11	▨
				Base of Excavation at 0.55m				

General Remarks:
1) Machine dug trial pit from ground level to 0.55m bgl. 2) LWD test undertaken at 0.55m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR109
Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350368.19, 420780.36	Stability: Stable	Dimensions: 1.20m × 0.60m
Hydrock Project No: C-19851	Ground Level: 11.46m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
0.30	ASB		
0.30	ES		
0.30	ES		
0.30 - 0.40	ES		
0.45	CBR	5.0%	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Firm to stiff dark brown sandy slightly gravelly CLAY with occasional rootlets and rare roots (up to 10mm) in diameter. Gravel is angular to subangular fine to coarse of limestone, mudstone, coal and brick. (MADE GROUND) *... Between 0.20m and 0.35m bgl: occasional occurrence of laboratory confirmed hard cement type asbestos (100 x 40mm).*	0.35	(0.35)	11.11	▨
Dark brown very gravelly silty fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick, slag, mudstone, limestone, sandstone and concrete with rare fragments of plastic. (MADE GROUND)	0.45	(0.10)	11.01	▨

Base of Excavation at 0.45m

General Remarks:
1) Machine dug trial pit from ground level to 0.45m bgl. 2) LWD test undertaken at 0.45m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR110
Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350530.61, 420793.42	Stability: Stable	Dimensions: 0.30m × 0.30m
Hydrock Project No: C-19851	Ground Level: 11.32m OD	Plant: Hand dug	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sandy CLAY with rare rootlets. (TOPSOIL)	0.10	(0.10)	11.22	▨
0.25	CBR	0.8%		Stiff reddish brown slightly sandy slightly gravelly CLAY with rare rootlets and low cobble content. Gravel is subangular fine of mudstone. Cobbles are subangular of mudstone. (HEAD)	0.25	(0.15)	11.07	▨

Base of Excavation at 0.25m

1
2
3
4
5

General Remarks:
1) Hand dug trial pit from ground level to 0.25m bgl. 2) LWD test undertaken at 0.25m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2			Trialpit No CBR111 Page No. 1 of 1
Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC	
Client: Ministry of Justice	Co-ords: 350460.64, 420719.35	Stability: Stable	Dimensions: 0.30m × 0.30m	Scale: 1:25
Hydrock Project No: C-19851	Ground Level: 11.26m OD	Plant: Hand dug		

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20 0.20	ES ES			Grass over dark brown gravelly clayey fine to coarse SAND with low cobble content. Gravel is angular to subangular fine to coarse of mudstone, coal, brick, sandstone and mudstone. Cobbles are subangular of sandstone. (MADE GROUND)	0.35	(0.35)	10.91	▨
0.50	CBR	3.2%		Firm yellowish brown mottled grey and dark brown sandy slightly gravelly CLAY with low cobble content. Gravel is subangular fine and medium of mudstone, siltstone and brick. (REWORKED NATURAL) (MADE GROUND)	0.50	(0.15)	10.76	▨

Base of Excavation at 0.50m

General Remarks:
1) Hand dug trial pit from ground level to 0.50m bgl. 2) LWD test undertaken at 0.50m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR112
Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350602.04, 420801.47	Stability: Stable	Dimensions: 1.60m × 0.60m
Hydrock Project No: C-19851	Ground Level: 12.79m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sandy slightly gravelly CLAY with rare rootlets and rare roots (up to 5mm) in diameter. Gravel is subangular to subrounded fine and medium of mudstone and quartzite with rare fragments of brick. (TOPSOIL)	0.30	(0.30)	12.49	▨
0.45	CBR	1.7%		Soft to firm reddish brown and dark brown sandy gravelly CLAY with rare rootlets. Gravel is subangular fine and medium of sandstone, mudstone and brick (REWORKED NATURAL) (MADE GROUND)	0.45	(0.15)	12.34	▩
				Base of Excavation at 0.45m				

General Remarks:
1) Machine dug trial pit from ground level to 0.45m bgl. 2) LWD test undertaken at 0.45m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR113
Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350645.21, 420905.46	Stability: Stable	Dimensions: 1.60m × 0.60m Scale: 1:25
Hydrock Project No: C-19851	Ground Level: 12.80m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30 0.30	ES ES			Grass over stiff dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular to subrounded fine and medium of limestone and mudstone with rare fragments of brick. (TOPSOIL)	0.45	(0.45)	12.35	▨
0.50	CBR	0.6%		Firm light grey mottled orangish brown sandy CLAY with rare rootlets. (HEAD)	0.50	(0.05)	12.30	░
				Base of Excavation at 0.50m				

General Remarks:
1) Machine dug trial pit from ground level to 0.50m bgl. 2) LWD test undertaken at 0.50m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No

CBR114

Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350656.72, 420725.72	Stability: Stable	Dimensions: 0.30m × 0.30m
Hydrock Project No: C-19851	Ground Level: 12.63m OD	Plant: Hand dug	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine to coarse of mudstone and quartzite with rare fragments or brick. (TOPSOIL)	0.15	(0.15)	12.48	▨
0.30	CBR	1.7%		Stiff dark brown mottled orangish brown slightly sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine of mudstone. (GLACIAL TILL)	0.30	(0.15)	12.33	▤
				Base of Excavation at 0.30m				

General Remarks:
1) Hand dug trial pit from ground level to 0.30m bgl. 2) LWD test undertaken at 0.30m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR115
Page No. 1 of 1

Method: Trial Pit	Date(s): 24/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350672.11, 420688.00	Stability: Stable	Dimensions: 2.00m × 0.60m
Hydrock Project No: C-19851	Ground Level: 12.17m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sandy slightly gravelly CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of coal, sandstone and mudstone. (TOPSOIL)	0.15	(0.15)	12.02	▨
0.35	ES			Soft to firm dark brown and black sandy slightly gravelly CLAY with rare rootlets. Gravel is angular to subangular fine to coarse of mudstone, coal, brick and charcoal. (MADE GROUND) *... At 0.50m bgl: Bedding gravel on west side of trial pit, trial pit extended to avoid service.*	0.55	(0.40)	11.62	▩
0.70	CBR	2.2%		Firm to stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular to subrounded fine and medium of mudstone and siltstone. (GLACIAL TILL)	0.70	(0.15)	11.47	░
				Base of Excavation at 0.70m				

General Remarks:
1) Machine dug trial pit from ground level to 0.70m bgl. 2) LWD test undertaken at 0.70m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Trialpit No CBR116 Page No. 1 of 1

Method: Trial Pit	Date(s): 24/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350747.83, 420683.68	Stability: Stable	Dimensions: 1.40m × 0.60m
Hydrock Project No: C-19851	Ground Level: 12.90m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.15	ES			Grass over firm to stiff dark brown sandy slightly gravelly desiccated CLAY with rare rootlets. Gravel is subangular fine to coarse of mudstone and quartzite with rare fragments of brick. (TOPSOIL)	0.25	(0.25)	12.65	▨
				Very stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular fine and medium of mudstone. (GLACIAL TILL)	0.50	(0.25)	12.40	▨
0.50	CBR	2.0%		Base of Excavation at 0.50m				

General Remarks:
1) Machine dug trial pit from ground level to 0.50m bgl. 2) LWD test undertaken at 0.50m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No

CBR117

Page No. 1 of 1

Method: Trial Pit	Date(s): 24/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350698.53, 420638.20	Stability: Stable	Dimensions: 1.70m 0.60m
Hydrock Project No: C-19851	Ground Level: 12.52m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over firm to stiff dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular to subrounded fine to coarse of limestone, sandstone and mudstone with rare fragments of brick. (TOPSOIL)	0.35	(0.35)	12.17	▨
				Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular fine and medium of mudstone and siltstone. (GLACIAL TILL)	0.60	(0.25)	11.92	▨
0.60	CBR	1.8%		Base of Excavation at 0.60m				

General Remarks:
1) Machine dug trial pit from ground level to 0.60m bgl. 2) LWD test undertaken at 0.60m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR118
Page No. 1 of 1

Method: Trial Pit
Date(s): 24/08/2021
Logged By: RS
Checked By: AC
Client: Ministry of Justice
Co-ords: 350773.06, 420619.00
Stability: Stable
Dimensions: 1.50m 0.60m
Scale: 1:25
Hydrock Project No: C-19851
Ground Level: 13.02m OD
Plant: JCB 3CX

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 0.10	ES ES			Grass over black becoming reddish brown slightly sandy GRAVEL. Gravel is angular to subangular fine to coarse of sandstone, coal and limestone. (MADE GROUND)	0.20	(0.20)	12.82	▨
0.40	CBR	2.3%		Firm reddish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded medium to coarse of mudstone and siltstone. (GLACIAL TILL)	0.40	(0.20)	12.62	▨
				Base of Excavation at 0.40m				

General Remarks:
1) Machine dug trial pit from ground level to 0.40m bgl. 2) LWD test undertaken at 0.40m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR119
Page No. 1 of 1

Method: Trial Pit	Date(s): 24/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350696.62, 420555.12	Stability: Stable	Dimensions: 1.70m × 0.60m
Hydrock Project No: C-19851	Ground Level: 11.71m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is angular to subangular fine to coarse of sandstone, mudstone, limestone and quartzite with rare fragments of brick and slate. (TOPSOIL)	0.40	(0.40)	11.31	▨
0.50	ES			Firm greyish brown sandy slightly gravelly CLAY with low cobble content. Gravel is angular to subangular fine to coarse of brick, siltstone, coal, mudstone and sandstone. Cobbles are subangular of brick. (MADE GROUND)	0.60	(0.20)	11.11	▩
0.65 0.70	D CBR	 2.1%		Stiff dark brown mottled yellowish brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine and medium of mudstone and siltstone. (REWORKED NATURAL) (MADE GROUND)	0.70	(0.10)	11.01	▩

Base of Excavation at 0.70m

General Remarks:
1) Machine dug trial pit from ground level to 0.70m bgl. 2) LWD test undertaken at 0.70m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR120
Page No. 1 of 1

Method: Trial Pit
Date(s): 24/08/2021
Logged By: RS
Checked By: AC
Client: Ministry of Justice
Co-ords: 350775.06, 420578.26
Stability: Slightly unstable
Dimensions: 1.20m 0.60m
Scale: 1:25
Hydrock Project No: C-19851
Ground Level: 12.69m OD
Plant: JCB 3CX

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over dark brown gravelly fine to coarse SAND with rare rootlets. Gravel is angular to subangular fine to coarse of mudstone and coal with rare fragments of ballast and limestone. (TOPSOIL)	0.15	(0.15)	12.54	▨
				Dark brown and dark grey slightly sandy angular to subangular fine to coarse GRAVEL of sandstone, limestone and coal. (MADE GROUND)	0.35	(0.20)	12.34	▩
0.40 0.45	D CBR	1.9%		Firm to stiff reddish brown mottled grey and orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone and siltstone. (GLACIAL TILL)	0.45	(0.10)	12.24	⁘
				Base of Excavation at 0.45m				

General Remarks:
1) Machine dug trial pit from ground level to 0.45m bgl. 2) LWD test undertaken at 0.45m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No

CBR121

Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350382.08, 420645.77	Stability: Stable	Dimensions: 0.30m x 0.30m Scale: 1:25
Hydrock Project No: C-19851	Ground Level: 10.59m OD	Plant: Hand dug	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over dark brown very sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine to coarse of coal, mudstone, brick, concrete and sandstone. (MADE GROUND)	0.15	(0.15)	10.44	▨
0.25	CBR	1.5%		Firm greyish brown sandy slightly gravelly CLAY. Gravel is subangular fine and medium of mudstone, siltstone and brick. (MADE GROUND)	0.25	(0.10)	10.34	▨
				Base of Excavation at 0.25m				

General Remarks:
1) Hand dug trial pit from ground level to 0.25m bgl. 2) LWD test undertaken at 0.25m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

	Project: Garth Wymott 2		Trialpit No CBR122 Page No. 1 of 1
Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350346.78, 420361.92	Stability: Stable	Dimensions: 0.30m x 0.30m Scale: 1:25
Hydrock Project No: C-19851	Ground Level: 10.79m OD	Plant: Hand dug	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown very sandy gravelly CLAY with rare rootlets and low cobble content. Gravel is angular to subangular fine to coarse of coal, brick, limestone and sandstone with rare plastic. Cobbles are subrounded of mudstone and quartzite. (MADE GROUND)	0.20	(0.20)	10.59	▨
0.35	CBR	1.7%		Firm orangish brown and dark brown sandy gravelly CLAY. Gravel is subangular fine to medium of coal, mudstone and brick. (MADE GROUND)	0.35	(0.15)	10.44	▨
				Base of Excavation at 0.35m				

General Remarks:
1) Hand dug trial pit from ground level to 0.35m bgl. 2) LWD test undertaken at 0.35m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR123
Page No. 1 of 1

Method: Trial Pit	Date(s): 25/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350275.24, 420165.83	Stability: Stable	Dimensions: 0.30m 0.30m
Hydrock Project No: C-19851	Ground Level: 13.50m OD	Plant: Hand dug	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over firm dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine of mudstone and siltstone with rare fragments of brick and rare plastic. (TOPSOIL)	0.20	(0.20)	13.30	▨
0.35	CBR	1.7%		Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular fine and medium of mudstone and siltstone. (GLACIAL TILL)	0.35	(0.15)	13.15	⁘
				Base of Excavation at 0.35m				

General Remarks:
1) Hand dug trial pit from ground level to 0.35m bgl. 2) LWD test undertaken at 0.35m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CBR124
Page No. 1 of 1

Method: Trial Pit
Date(s): 25/08/2021
Logged By: RS
Checked By: AC
Client: Ministry of Justice
Co-ords: 350335.32, 420148.64
Stability: Stable
Dimensions: 0.30m × 0.30m
Scale: 1:25
Hydrock Project No: C-19851
Ground Level: 12.57m OD
Plant: Hand dug

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
0.20	ES		
0.35	CBR	1.2%	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Grass over stiff dark brown and greyish brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone, quartzite and coal with rare fragments of brick and clinker. (TOPSOIL)	0.30	(0.30)	12.27	▨
Stiff orangish brown mottled grey slightly sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine of mudstone. (GLACIAL TILL)	0.35	(0.05)	12.22	∴

Base of Excavation at 0.35m

General Remarks:
1) Hand dug trial pit from ground level to 0.35m bgl. 2) LWD test undertaken at 0.35m bgl to obtain a CBR value. 3) Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Trialpit No CT21 Page No. 1 of 1	
Method: Hand-dug Pit	Date(s): 27/08/2021	Logged By: RC	Checked By: RS
Client: Ministry of Justice	Co-ords: 350323.82, 420201.98	Stability:	Dimensions: 0.30m × 0.30m Scale: 1:10
Hydrock Project No: C-19851		Plant: Hand dug	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.25	ES			Grass over soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel Is angular to subrounded fine to coarse of various lithologies including brick, coal and limestone with rare fragments of ceramic and glass. (MADE GROUND)	0.30	(0.30)		▨
				Base of Excavation at 0.30m				

General Remarks:
1. Shallow hand dug pit within the contamination testing zone. 2. Complete at 0.30m bgl. 3. Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
CT22
Page No. 1 of 1

Method: Hand-dug Pit
Date(s): 27/08/2021
Logged By: RC
Checked By: RS
Client: Ministry of Justice
Co-ords: 350312.49, 420190.59
Stability:
Dimensions: 0.30m × 0.30m
Scale: 1:10
Hydrock Project No: C-19851
Plant: Hand dug

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel Is angular to subrounded fine to coarse of various lithologies including brick, coal and limestone with rare fragments of plastic. (MADE GROUND)	0.10	(0.10)		▨
0.25	ES			Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is angular to surrounded fine and medium of mudstone, sandstone, brick and coal. (MADE GROUND)	0.25	(0.15)		▨
				Base of Excavation at 0.25m				

General Remarks:
1. Shallow hand dug pit within the contamination testing zone. 2. Complete at 0.25m bgl. 3. Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2		Trialpit No CT23 Page No. 1 of 1
Method: Hand-dug Pit	Date(s): 27/08/2021	Logged By: RC	Checked By: RS
Client: Ministry of Justice	Co-ords: 350303.16, 420175.76	Stability:	Dimensions: 0.30m × 0.30m Scale: 1:10
Hydrock Project No: C-19851		Plant: Hand dug	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Grass over firm dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine and medium of mudstone, sandstone, brick and coal. (MADE GROUND)	0.20	(0.20)		▨
				Base of Excavation at 0.20m				

General Remarks:
1. Shallow hand dug pit within the contamination testing zone. 2. Complete at 0.20m bgl. 3. Backfilled with arisings on completion.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
SA101
Page No. 1 of 1

Method: Trial Pit
Date(s): 27/08/2021
Logged By: RS
Checked By: AC
Client: Ministry of Justice
Co-ords: 350312.12, 420746.87
Stability: Stable
Dimensions: 2.30m × 0.60m
Scale: 1:25
Hydrock Project No: C-19851
Ground Level: 10.58m OD
Plant: JCB 3CX

Samples / Tests

Depth (m)	Type	Results	Water-Strikes
0.30 - 0.40	ES		
0.35	ASB		
0.60	HSV	38kPa	
0.90	D		
0.90	HSV	39kPa	
1.20	HSV	88kPa	
1.50 - 1.80	B		
1.50	HSV	114kPa	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Grass over dark brown very gravelly clayey fine to coarse SAND with rare rootlets and low cobble content. Gravel is angular to subangular fine to coarse of brick, coal, mudstone, sandstone and siltstone. (MADE GROUND) *... At 0.35m bgl: one piece of suspected hard cement type asbestos (70 x 30mm), no asbestos detected by lab.*	0.40	(0.40)	10.18	▨
Soft dark grey sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine to medium of mudstone and coal. (MADE GROUND) *... At 0.75m bgl: Redundant land drain broken, visible evidence of infilling of soils within drain.*	0.80	(0.40)	9.78	▨
Firm becoming stiff orangish brown mottled grey sandy slightly gravelly CLAY. Gravel is subangular fine and medium of mudstone and siltstone. (HEAD)	1.80	(1.00)	8.78	

Base of Excavation at 1.80m

General Remarks:
1) Machine dug trial pit from ground level to 1.80m bgl. 2) Soakaway test undertaken between 0.77m and 1.80m bgl. 3) Soakaway test undertaken below land drain to avoid infiltration to existing drainage. 4) Hole backfilled with gravel and soakaway test run.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2		Trialpit No SA102 Page No. 1 of 1

Method: Trial Pit	Date(s): 26/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350439.76, 420825.24	Stability: Stable	Dimensions: 2.00m × 0.60m Scale: 1:25
Hydrock Project No: C-19851	Ground Level: 10.52m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft to firm dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine to coarse of mudstone and siltstone with rare fragments of brick. (TOPSOIL)	0.35	(0.35)	10.17	▨
0.60 0.60	D HSV	 71kPa		Firm to stiff orangish brown mottled grey sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular to subrounded fine to coarse of sandstone, mudstone and siltstone. (HEAD)	1.65	(1.30)	8.87	▨
1.20 - 1.50 1.20	B HSV	 103kPa						
				Base of Excavation at 1.65m				

General Remarks:
1) Machine dug trial pit from ground level to 1.65m bgl. 2) Soakaway test undertaken between 0.20m and 1.65m bgl. 3) Hole backfilled with gravel and soakaway test run.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock	Project: Garth Wymott 2	Trialpit No SA102A Page No. 1 of 1

Method: Trial Pit	Date(s): 26/08/2021	Logged By: RS	Checked By: AC	
Client: Ministry of Justice	Co-ords: 350437.18, 420824.96	Stability: Stable	Dimensions: 2.00m 0.60m	Scale: 1:25
Hydrock Project No: C-19851	Ground Level: 10.49m OD	Plant: JCB 3CX		

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular to subrounded fine to coarse of mudstone and quartzite. (TOPSOIL)	0.30	(0.30)	10.19	▨
0.50	HSV	90kPa		Stiff orangish brown mottled light grey sandy slightly gravelly CLAY with low cobble content and occasional lenses of light brown silty sand. Gravel is subangular to subrounded fine to coarse of mudstone and sandstone. Cobbles are subrounded of sandstone. (REWORKED NATURAL) (MADE GROUND)	0.70	(0.40)	9.79	▩
				Base of Excavation at 0.70m				

General Remarks:
1) Machine dug trial pit from ground level to 0.70m bgl. 2) Land drain encountered at 0.70m bgl. 3) Hole terminated and backfilled with arisings.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No

SA103

Page No. 1 of 1

Method: Trial Pit	Date(s): 26/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350538.23, 420826.71	Stability: Stable	Dimensions: 2.00m × 0.60m
Hydrock Project No: C-19851	Ground Level: 10.99m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
0.60 0.65	HSV D	62kPa	
1.20 - 1.50 1.20	B HSV	96kPa	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Grass over soft dark brown sandy slightly gravelly CLAY with occasional rootlets. Gravel is subangular fine and medium of mudstone and siltstone with rare fragments of brick. (TOPSOIL)	0.40	(0.40)	10.59	▨
Firm light grey sandy slightly gravelly CLAY with rare rootlets. Gravel is subangular fine to coarse of mudstone and siltstone. (HEAD)	0.90	(0.50)	10.09	▨
Firm to stiff orangish brown mottled grey sandy slightly gravelly CLAY. Gravel is subangular fine and medium of siltstone and mudstone. (HEAD)	1.50	(0.60)	9.49	▨

Base of Excavation at 1.50m

General Remarks:
1) Machine dug trial pit from ground level to 1.50m bgl. 2) Soakaway test undertaken between 0.47m and 1.50m bgl. 3) Test run for 7 hours and trial pit backfilled with arisings on completion following no infiltration.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No

SA104

Page No. 1 of 1

Method: Trial Pit	Date(s): 24/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350755.77, 420551.30	Stability: Stable	Dimensions: 2.00m × 0.60m
Hydrock Project No: C-19851	Ground Level: 12.54m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests

Depth (m)	Type	Results
0.20	ES	
0.20	ES	
0.50	ES	
0.65	ES	
1.00	D	
1.20 - 1.60	B	
1.20 - 1.60	B	
1.30	HSV	116kPa

Water-Strikes

Stratum Description

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over soft dark brown sandy slightly gravelly CLAY with rare rootlets . Gravel is angular to subangular fine to coarse of brick, coal, clinker, mudstone, sandstone and limestone. (MADE GROUND)	0.35	(0.35)	12.19
Red grey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of sandstone. (MADE GROUND)	0.45	(0.10)	12.09
Black sandy ashy angular to subangular fine to coarse GRAVEL of limestone and ballast. (MADE GROUND)	0.60	(0.15)	11.94
Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone and siltstone. (GLACIAL TILL)	1.60	(1.00)	10.94

Base of Excavation at 1.60m

General Remarks:
1) Machine dug trial pit from ground level to 1.60m bgl. 2) Soakaway test undertaken between 0.60m and 1.60m bgl. 3) Test run for 4 hours and trial pit backfilled with arisings on completion following no infiltration.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No

SA105

Page No. 1 of 1

Method: Trial Pit	Date(s): 27/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350347.53, 420332.73	Stability: Stable	Dimensions: 2.00m 0.60m
Hydrock Project No: C-19851	Ground Level: 11.01m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sandy CLAY with rare rootlets. (TOPSOIL)	0.15	(0.15)	10.86	▨
0.30 - 0.50	ES			Soft to firm dark brown and greyish brown sandy gravelly CLAY with low cobble and boulder content. Gravel is angular to subangular fine to coarse of brick, concrete, coal, mudstone, slate, sandstone and quartzite with rare fragments of plastic and polystyrene. Cobbles and boulders are subangular of concrete. (MADE GROUND)	1.00	(0.85)	10.01	▩
				Light grey angular to subangular fine to coarse GRAVEL of limestone. (MADE GROUND)	1.20	(0.20)	9.81	▩
				Base of Excavation at 1.20m				

General Remarks:
1) Machine dug trial pit from ground level to 1.20m bgl. 2) Suspected bedding gravel encountered at 1.20m bgl. 3) Hole terminated and backfilled with arisings.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Garth Wymott 2

Trialpit No
SA105A
Page No. 1 of 1

Method: Trial Pit	Date(s): 27/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350349.53, 420332.74	Stability: Stable	Dimensions: 2.00m × 0.60m
Hydrock Project No: C-19851	Ground Level: 11.01m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over soft dark brown sandy CLAY with rare rootlets. (TOPSOIL)	0.15	(0.15)	10.86	▨
				Soft to firm dark brown sandy gravelly CLAY with low cobble content. Gravel is angular to subangular fine to coarse of brick, limestone, concrete, coal, mudstone, sandstone and quartzite with rare fragments of plastic and timber. Cobbles are subangular of brick. (MADE GROUND)	0.90	(0.75)	10.11	▩
1.20	HSV	44kPa		Soft to firm light grey sandy CLAY. (MADE GROUND)	1.50	(0.60)	9.51	▩
				Base of Excavation at 1.50m				

General Remarks:
1) Machine dug trial pit from ground level to 1.50m bgl. 2) Land drain encountered at 1.50m bgl. 3) Hole terminated and backfilled with arisings.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Project: Garth Wymott 2

Trialpit No
SA106
Page No. 1 of 1

Method: Trial Pit	Date(s): 27/08/2021	Logged By: RS	Checked By: AC
Client: Ministry of Justice	Co-ords: 350241.71, 420196.14	Stability: Stable	Dimensions: 1.50m x 0.60m
Hydrock Project No: C-19851	Ground Level: 13.85m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
0.20	ES		
0.50	ES		
0.60	D		
0.80	HSV	89kPa	
1.20 - 1.50	B		
1.20 - 1.50	B		
1.30	HSV	92kPa	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Grass over soft dark brown sandy slightly gravelly CLAY with occasional rootlets. Gravel is subangular to subrounded fine and medium of coal and mudstone with rare fragments of brick and rare plastic. (TOPSOIL)	0.30	(0.30)	13.55	▨
Firm reddish brown and light brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone, coal and brick. (MADE GROUND)	0.65	(0.35)	13.20	▩
Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone and siltstone. (GLACIAL TILL)	1.50	(0.85)	12.35	▒

Base of Excavation at 1.50m

General Remarks:
1) Machine dug trial pit from ground level to 1.50m bgl. 2) Soakaway test undertaken between 0.50m and 1.50m bgl. 3) Test run for 6 hours and trial pit backfilled with arisings on completion following no infiltration.

Groundwater: No groundwater encountered

Logged in general accordance with BS5930:2015

Soakaway Datasheets

1 DAY INFILTRATION ASSESSMENT - AIDE MEMOIR

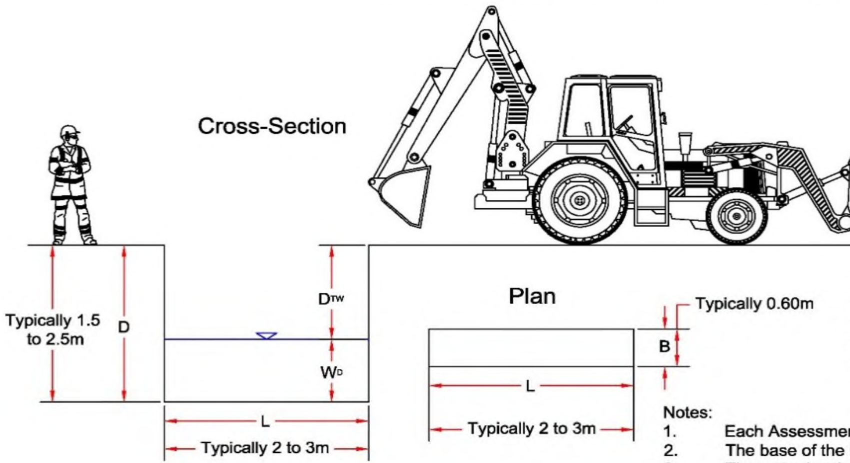
Site: Garth Wymott 2

Client: Ministry of Justice

Test Location SA101 **Date of start** 27/08/2021 **Date at end** 31/08/2021

ANTICIPATED GROUND PROFILE FROM DESK STUDY	ACTUAL GROUND PROFILE FROM EXCAVATION
GROUND LEVEL	GROUND LEVEL
	0.00-0.80 MADE GROUND
	0.80-1.80 HEAD- Firm becoming stiff orangish brown mottled grey sandy slightly gravelly CLAY.
BASE OF PIT	BASE OF PIT 1.80m bgl

INFILTRATION ASSESSMENT PIT TYPICAL DIMENSIONS



ACTUAL DIMENSIONS			
L			
B			
D			
D_{TW}			
W_D			

Abbreviations:

L: Length of Infiltration Assessment Pit.
B: Breadth / Width of Infiltration Assessment Pit.
D: Depth of Infiltration Assessment Pit.
D_{TW}: Initial Depth to Top of Water.
W_D: Calculated Water Depth.

Notes:

1. Each Assessment shall be limited to a single stratum.
2. The base of the Infiltration Assessment Pit shall be below all Made Ground,
3. The water level shall not be raised above the base of the Made Ground.
4. The base of the Infiltration Assessment Pit shall be at least 1m into the stratum which is to be assessed.
5. The base of the Infiltration Assessment Pit shall be above the Water Table.
6. Minimum target depth of water of 1.0m.
7. Where any of the above conditions cannot be met, it shall be reported immediately to the Project Manager for additional guidance before the test is commenced.

Calculated Water Depth (W_D) $= D - D_{TW}$

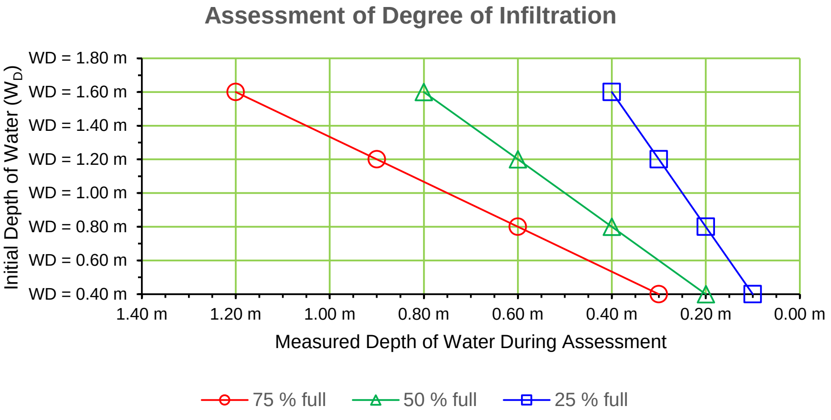
Maximum Fill Volume (V_w) $= W_D \times B \times L$

Corrected Water Volume (V_{wc}) $= V_w \times$ Gravel Porosity (P_i)

Infiltration	RUN 1		RUN 2		RUN 3	
	W_D		W_D		W_D	
	W_{D1}	D_{TW1}	W_{D2}	D_{TW2}	W_{D3}	D_{TW3}
75% full	0.75	1.05				
25% full	0.25	1.55				

SITE OBSERVATIONS - VOLUME LOSS

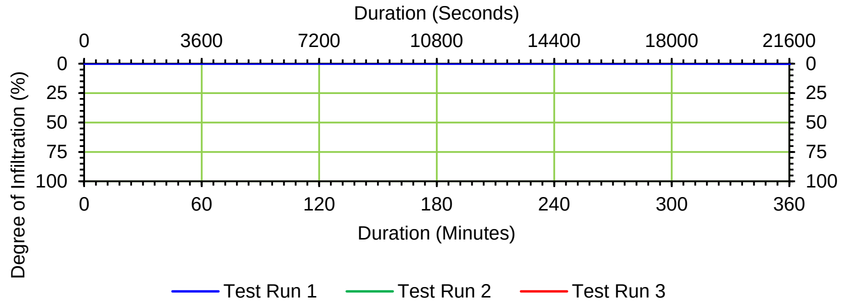
Test Run	Infiltration Records up to 6 Hours	Comments
1	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Refer to results of Run 2
2	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Refer to results of Run 3
3	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Indicative Infiltration Rate achieved.



1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: Garth Wymott 2
Client: Pick Everard
Test Location SA101 **Date of start** 27/08/2021 **Date at end** 31/08/2021

Test Run 1				Test Run 2				Test Run 3			
Pit Dimensions (m)				Pit Dimensions (m)				Pit Dimensions (m)			
Trial Pit Length (L)			1.800m	Trial Pit Length (L)				Trial Pit Length (L)			
Trial Pit Breadth / Width (B)			0.800m	Trial Pit Breadth / Width (B)				Trial Pit Breadth / Width (B)			
Effective Depth (D)			1.800m	Effective Depth (D)				Effective Depth (D)			
Time at Start of Filling			11.00	Time at Start of Filling				Time at Start of Filling			
Time at End of Filling			11.02	Time at End of Filling				Time at End of Filling			
Depth from Surface to Water (D_{TW})			0.800m	Depth below Surface to Water (D_{TW})				Depth below Surface to Water (D_{TW})			
Water Depth (W_D)			1.000m	Water Depth (W_D)			-	Water Depth (W_D)			-
Maximum Fill Volume (V_W)			1.440m³	Maximum Fill Volume (V_W)			-	Maximum Fill Volume (V_W)			-
Gravel used to backfill Test Pit			Yes	Gravel used to backfill Test Pit				Gravel used to backfill Test Pit			
Porosity of Gravel Backfill (P_t)			0.400	Porosity of Gravel Backfill (P_t)				Porosity of Gravel Backfill (P_t)			
Corrected Water Volume (V_{WC})			0.576m³	Corrected Water Volume (V_{WC})			-	Corrected Water Volume (V_{WC})			-
Time to soakaway				Time to soakaway				Time to soakaway			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	11.020	0.800	0								
1	11.030	0.800	60								
1	11.040	0.800	120								
1	11.050	0.800	180								
1	11.100	0.800	480								
1	11.200	0.800	1080								
1	11.300	0.800	1680								
1	11.400	0.800	2280								
1	11.500	0.800	2880								
1	12.000	0.800	3480								
1	12.300	0.800	5280								
1	13.000	0.800	7080								
1	13.300	0.800	8880								
1	14.000	0.800	10680								
1	14.300	0.800	12480								
1	15.000	0.800	14280								
1	15.300	0.800	16080								
1	16.000	0.800	17880								
3	9.000	0.850	165480								
4	9.000	0.900	251880								
4	9.000	0.900	251880								
4	9.000	0.900	251880								
4	9.000	0.900	251880								
25% water loss (75% full)			1.050m	**25% water loss (75% full)**			-	**25% water loss (75% full)**			-
50% water loss (50% full)			1.300m	**50% water loss (50% full)**			-	**50% water loss (50% full)**			-
75% water loss (25% full)			1.550m	**75% water loss (25% full)**			-	**75% water loss (25% full)**			-
25% time (seconds)			-	**25% time (seconds)**			-	**25% time (seconds)**			-
75% time (seconds)			-	**75% time (seconds)**			-	**75% time (seconds)**			-
Vp 75-25			0.288m³	**Vp 75-25**			-	**Vp 75-25**			-
ap 50 (Actual area from test)			4.040m³	**ap 50 (Actual area from test)**			-	**ap 50 (Actual area from test)**			-
tp 75 - 25				**tp 75 - 25**				**tp 75 - 25**			
Soil Infiltration Rate		-		**Soil Infiltration Rate**		-		**Soil Infiltration Rate**		-	



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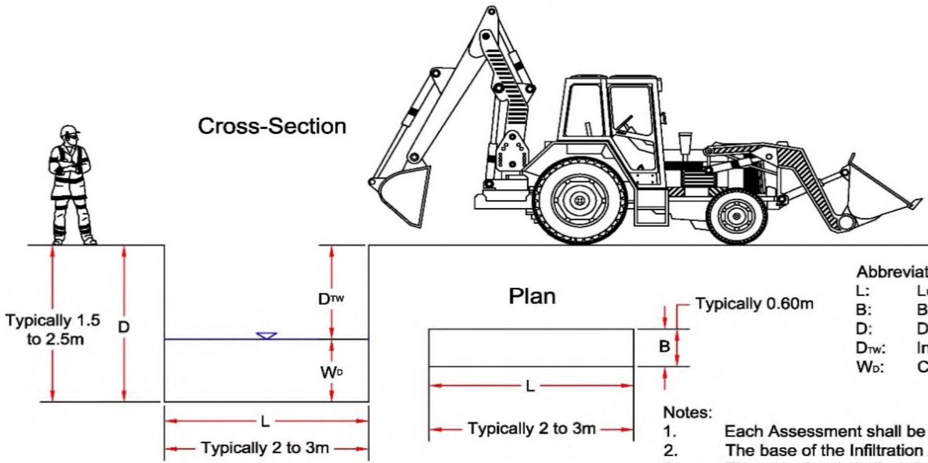
	SIGN	Russell Sumner
	DATE	31/08/2021
Calculated By	PRINT	Russell Sumner
	SIGN	Russell Sumner
	DATE	14/10/2021
Checked by	PRINT	Adam Cheers
	SIGN	Adam Cheers
	DATE	15/10/2021

1 DAY INFILTRATION ASSESSMENT - AIDE MEMOIR

Site: Garth Wymott 2
Client: Ministry of Justice
Test Location SA102 **Date of start** 26/08/2021 **Date at end** 31/08/2021

ANTICIPATED GROUND PROFILE FROM DESK STUDY		ACTUAL GROUND PROFILE FROM EXCAVATION	
GROUND LEVEL		GROUND LEVEL	
		0.00-0.35	TOPSOIL
		0.35-1.65	GLACIAL TILL- Firm to stiff orangish brown mottled grey sandy slightly gravelly CLAY.
BASE OF PIT		BASE OF PIT	1.65m bgl

INFILTRATION ASSESSMENT PIT TYPICAL DIMENSIONS



ACTUAL DIMENSIONS			
L			
B			
D			
D_{TW}			
W_D			

Abbreviations:

L:	Length of Infiltration Assessment Pit.
B:	Breadth / Width of Infiltration Assessment Pit.
D:	Depth of Infiltration Assessment Pit.
D_{TW}:	Initial Depth to Top of Water.
W_D:	Calculated Water Depth.

Notes:
1. Each Assessment shall be limited to a single stratum.
2. The base of the Infiltration Assessment Pit shall be below all Made Ground,
3. The water level shall not be raised above the base of the Made Ground.
4. The base of the Infiltration Assessment Pit shall be at least 1m into the stratum which is to be assessed.
5. The base of the Infiltration Assessment Pit shall be above the Water Table.
6. Minimum target depth of water of 1.0m.
7. Where any of the above conditions cannot be met, it shall be reported immediately to the Project Manager for additional guidance before the test is commenced.

Calculated Water Depth (W_D) $= D - D_{TW}$

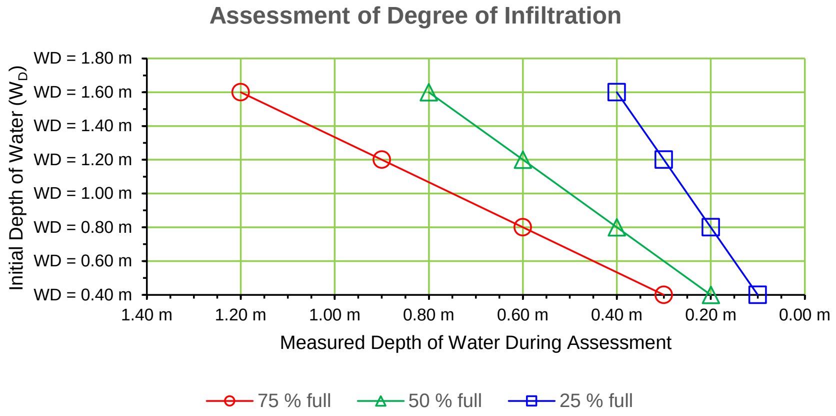
Maximum Fill Volume (V_w) $= W_D \times B \times L$

Corrected Water Volume (V_{wc}) $= V_w \times$ Gravel Porosity (P_i)

Infiltration	RUN 1		RUN 2		RUN 3	
	W_D		W_D		W_D	
	W_{D1}	D_{TW1}	W_{D2}	D_{TW2}	W_{D3}	D_{TW3}
75% full	1.09	0.563				
25% full	0.36	1.288				

SITE OBSERVATIONS - VOLUME LOSS

Test Run	Infiltration Records up to 6 Hours	Comments
1	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Refer to results of Run 2
2	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Refer to results of Run 3
3	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Indicative Infiltration Rate achieved.



1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: Garth Wymott 2

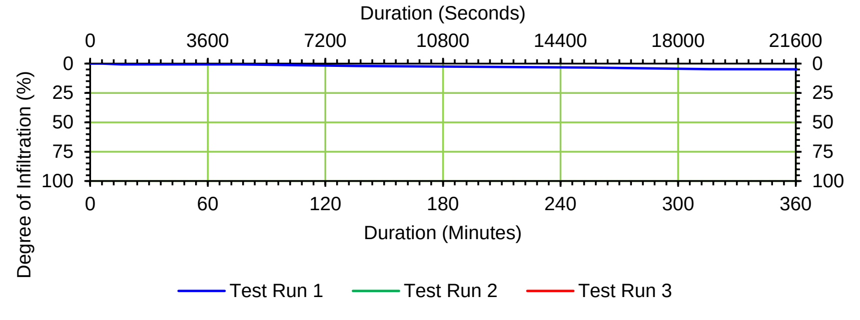
Client: Pick Everard

Test Location SA102 **Date of start** 26/08/2021 **Date at end** 31/08/2021

Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	2.000m	Trial Pit Length (L)		Trial Pit Length (L)	
Trial Pit Breadth / Width (B)	0.600m	Trial Pit Breadth / Width (B)		Trial Pit Breadth / Width (B)	
Effective Depth (D)	1.650m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	10.41	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	10.44	Time at End of Filling		Time at End of Filling	
Depth from Surface to Water (D_{TW})	0.200m	Depth below Surface to Water (D_{TW})		Depth below Surface to Water (D_{TW})	
Water Depth (W_D)	1.450m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	1.740m^3	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	Yes	Gravel used to backfill Test Pit		Gravel used to backfill Test Pit	
Porosity of Gravel Backfill (P_t)	0.400	Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	0.696m^3	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway				**Time to soakaway**				**Time to soakaway**			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	10.440	0.200	0								
1	10.450	0.200	60								
1	10.460	0.200	120								
1	10.470	0.200	180								
1	10.480	0.200	240								
1	10.490	0.200	300								
1	10.500	0.200	360								
1	11.000	0.210	960								
1	11.100	0.210	1560								
1	11.200	0.210	2160								
1	11.300	0.210	2760								
1	12.000	0.110	4560								
1	13.000	0.230	8160								
1	14.000	0.240	11760								
1	15.000	0.250	15360								
1	16.000	0.270	18960								
2	8.000	0.300	76560								
2	13.000	0.320	94560								
5	9.000	0.660	339360								
6	9.000	0.660	425760								
6	9.000	0.660	425760								
6	9.000	0.660	425760								
6	9.000	0.660	425760								

25% water loss (75% full)	0.563m	**25% water loss (75% full)**	-	**25% water loss (75% full)**	-
50% water loss (50% full)	0.925m	**50% water loss (50% full)**	-	**50% water loss (50% full)**	-
75% water loss (25% full)	1.288m	**75% water loss (25% full)**	-	**75% water loss (25% full)**	-
25% time (seconds)	269160 sec	**25% time (seconds)**	-	**25% time (seconds)**	-
75% time (seconds)	-	**75% time (seconds)**	-	**75% time (seconds)**	-
Vp 75-25	0.348m^3	**Vp 75-25**	-	**Vp 75-25**	-
ap 50 (Actual area from test)	4.970m^3	**ap 50 (Actual area from test)**	-	**ap 50 (Actual area from test)**	-
tp 75 - 25		**tp 75 - 25**		**tp 75 - 25**	
Soil Infiltration Rate	-	**Soil Infiltration Rate**	-	**Soil Infiltration Rate**	-



Form completed by		
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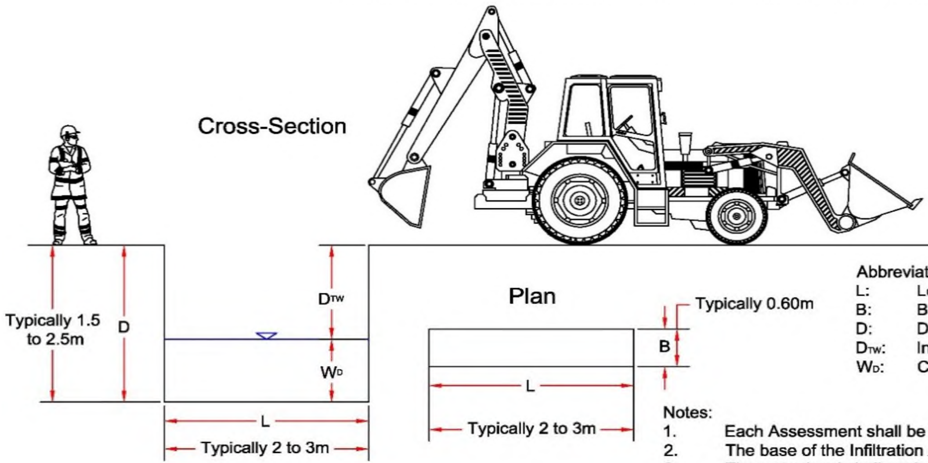
	SIGN	Russell Sumner
	DATE	26/08/2021
Calculated By	PRINT	Russell Sumner
	SIGN	Russell Sumner
	DATE	14/10/2021
Checked by	PRINT	Adam Cheers
	SIGN	Adam Cheers
	DATE	15/10/2021

1 DAY INFILTRATION ASSESSMENT - AIDE MEMOIR

Site: Garth Wymott 2
Client: Ministry of Justice
Test Location SA103 **Date of start** 26/08/2021 **Date at end** 26/08/2021

ANTICIPATED GROUND PROFILE FROM DESK STUDY		ACTUAL GROUND PROFILE FROM EXCAVATION	
GROUND LEVEL		GROUND LEVEL	
		0.00-0.40	TOPSOIL
		0.40-0.90	HEAD- Firm light grey sandy slightly gravelly CLAY.
		0.90-1.50	HEAD-Firm to stiff orangish brown mottled grey sandy slightly gravelly CLAY.
BASE OF PIT		BASE OF PIT	1.50m bgl

INFILTRATION ASSESSMENT PIT TYPICAL DIMENSIONS



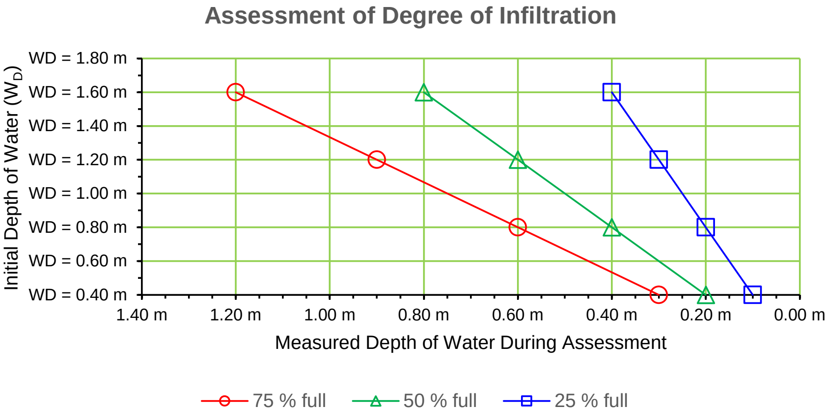
ACTUAL DIMENSIONS			
L			
B			
D			
D_{TW}			
W_D			

Abbreviations:
L: Length of Infiltration Assessment Pit.
B: Breadth / Width of Infiltration Assessment Pit.
D: Depth of Infiltration Assessment Pit.
D_{TW}: Initial Depth to Top of Water.
W_D: Calculated Water Depth.

Notes:
1. Each Assessment shall be limited to a single stratum.
2. The base of the Infiltration Assessment Pit shall be below all Made Ground,
3. The water level shall not be raised above the base of the Made Ground.
4. The base of the Infiltration Assessment Pit shall be at least 1m into the stratum which is to be assessed.
5. The base of the Infiltration Assessment Pit shall be above the Water Table.
6. Minimum target depth of water of 1.0m.
7. Where any of the above conditions cannot be met, it shall be reported immediately to the Project Manager for additional guidance before the test is commenced.

Calculated Water Depth (W_D) $= D - D_{TW}$
Maximum Fill Volume (V_w) $= W_D \times B \times L$
Corrected Water Volume (V_{wc}) $= V_w \times$ Gravel Porosity (P_i)

Infiltration	RUN 1		RUN 2		RUN 3	
	W_D		W_D		W_D	
	W_{D1}	D_{TW1}	W_{D2}	D_{TW2}	W_{D3}	D_{TW3}
75% full	0.77	0.728				
25% full	0.26	1.243				



SITE OBSERVATIONS - VOLUME LOSS		
Test Run	Infiltration Records up to 6 Hours	Comments
1	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Refer to results of Run 2
2	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Refer to results of Run 3
3	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Indicative Infiltration Rate achieved.

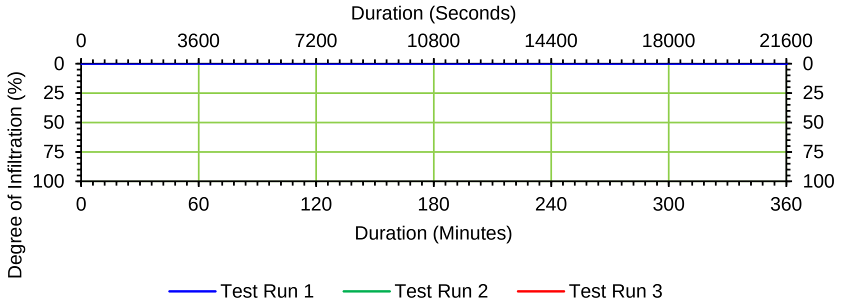
1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: Garth Wymott 2
Client: Pick Everard
Test Location SA103 **Date of start** 26/08/2021 **Date at end** 26/08/2021

Test Run 1		**Test Run 2**		**Test Run 3**	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	2.000m	Trial Pit Length (L)		Trial Pit Length (L)	
Trial Pit Breadth / Width (B)	0.600m	Trial Pit Breadth / Width (B)		Trial Pit Breadth / Width (B)	
Effective Depth (D)	1.500m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	9.28	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	9.30	Time at End of Filling		Time at End of Filling	
Depth from Surface to Water (D_{TW})	0.470m	Depth below Surface to Water (D_{TW})		Depth below Surface to Water (D_{TW})	
Water Depth (W_D)	1.030m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	1.236m³	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit		Gravel used to backfill Test Pit	
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	1.236m³	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway				**Time to soakaway**				**Time to soakaway**			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	9.300	0.470	0								
1	9.310	0.470	60								
1	9.320	0.470	120								
1	9.330	0.470	180								
1	9.340	0.470	240								
1	9.350	0.470	300								
1	9.400	0.470	600								
1	9.500	0.470	1200								
1	10.000	0.470	1800								
1	10.300	0.470	3600								
1	11.000	0.470	5400								
1	12.000	0.470	9000								
1	13.000	0.470	12600								
1	13.300	0.470	14400								
1	14.000	0.470	16200								
1	14.300	0.470	18000								
1	15.000	0.470	19800								
1	15.300	0.470	21600								
1	16.000	0.470	23400								
1	16.000	0.470	23400								
1	16.000	0.470	23400								
1	16.000	0.470	23400								
1	16.000	0.470	23400								

25% water loss (75% full)	0.728m	**25% water loss (75% full)**	-	**25% water loss (75% full)**	-
50% water loss (50% full)	0.985m	**50% water loss (50% full)**	-	**50% water loss (50% full)**	-
75% water loss (25% full)	1.243m	**75% water loss (25% full)**	-	**75% water loss (25% full)**	-
25% time (seconds)	-	**25% time (seconds)**	-	**25% time (seconds)**	-
75% time (seconds)	-	**75% time (seconds)**	-	**75% time (seconds)**	-
Vp 75-25	0.618m³	**Vp 75-25**	-	**Vp 75-25**	-
ap 50 (Actual area from test)	3.878m³	**ap 50 (Actual area from test)**	-	**ap 50 (Actual area from test)**	-
tp 75 - 25		**tp 75 - 25**		**tp 75 - 25**	
Soil Infiltration Rate	-	**Soil Infiltration Rate**	-	**Soil Infiltration Rate**	-



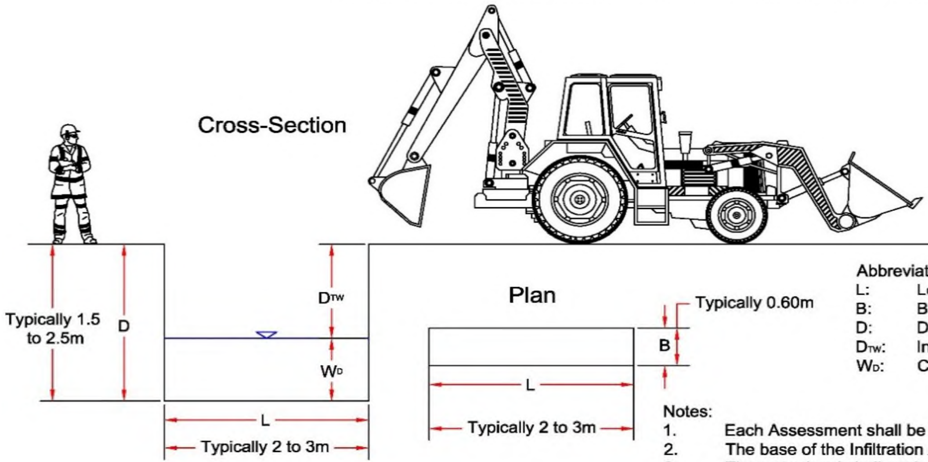
Form completed by		
Tested By	PRINT	Russell Sumner
	SIGN	Russell Sumner
	DATE	26/08/2021
Calculated By	PRINT	Russell Sumner
	SIGN	Russell Sumner
	DATE	14/10/2021
Checked by	PRINT	Adam Cheers
	SIGN	Adam Cheers
	DATE	15/10/2021

1 DAY INFILTRATION ASSESSMENT - AIDE MEMOIR

Site: Garth Wymott 2
Client: Ministry of Justice
Test Location SA104 **Date of start** 24/08/2021 **Date at end** 24/08/2021

ANTICIPATED GROUND PROFILE FROM DESK STUDY	ACTUAL GROUND PROFILE FROM EXCAVATION	
GROUND LEVEL	GROUND LEVEL	
	0.00-0.60	MADE GROUND
	0.60-1.60	GLACIAL TILL- Stiff reddish brown slightly sandy slightly gravelly CLAY.
BASE OF PIT	BASE OF PIT	1.60m bgl

INFILTRATION ASSESSMENT PIT TYPICAL DIMENSIONS



ACTUAL DIMENSIONS			
L			
B			
D			
D_{TW}			
W_D			

Abbreviations:
L: Length of Infiltration Assessment Pit.
B: Breadth / Width of Infiltration Assessment Pit.
D: Depth of Infiltration Assessment Pit.
D_{TW}: Initial Depth to Top of Water.
W_D: Calculated Water Depth.

Calculated Water Depth (W_D) = D - D_{TW}

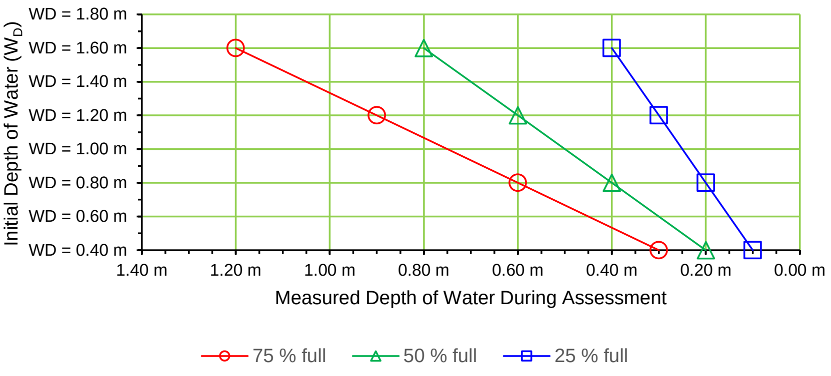
Maximum Fill Volume (V_w) = W_D x B x L

Corrected Water Volume (V_{wc}) = V_w x Gravel Porosity (P_t)

Notes:
1. Each Assessment shall be limited to a single stratum.
2. The base of the Infiltration Assessment Pit shall be below all Made Ground,
3. The water level shall not be raised above the base of the Made Ground.
4. The base of the Infiltration Assessment Pit shall be at least 1m into the stratum which is to be assessed.
5. The base of the Infiltration Assessment Pit shall be above the Water Table.
6. Minimum target depth of water of 1.0m.
7. Where any of the above conditions cannot be met, it shall be reported immediately to the Project Manager for additional guidance before the test is commenced.

Infiltration	RUN 1		RUN 2		RUN 3	
	W_D		**W_D**		**W_D**	
	W_{D1}	D_{TW1}	W_{D2}	D_{TW2}	W_{D3}	D_{TW3}
75% full	0.75	0.85				
25% full	0.25	1.35				

Assessment of Degree of Infiltration



SITE OBSERVATIONS - VOLUME LOSS		
Test Run	Infiltration Records up to 6 Hours	Comments
1	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Refer to results of Run 2
2	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Refer to results of Run 3
3	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Indicative Infiltration Rate achieved.

1 DAY INFILTRATION ASSESSMENT - WORKSHEET

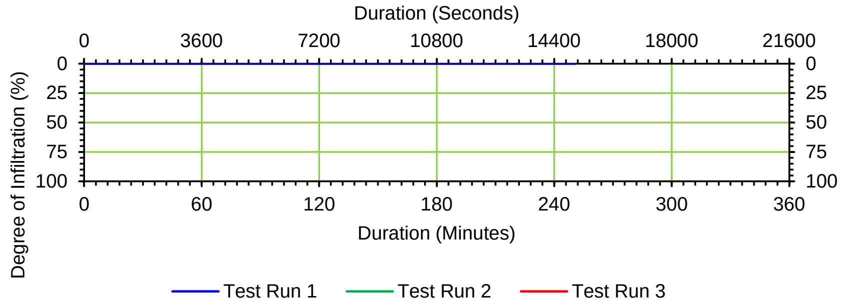
Site: Garth Wymott 2
Client: Pick Everard

Test Location	SA104	**Date of start**	24/08/2021	**Date at end**	24/08/2021

Test Run 1		**Test Run 2**		**Test Run 3**	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	2.000m	Trial Pit Length (L)		Trial Pit Length (L)	
Trial Pit Breadth / Width (B)	0.600m	Trial Pit Breadth / Width (B)		Trial Pit Breadth / Width (B)	
Effective Depth (D)	1.600m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	11.14	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	11.19	Time at End of Filling		Time at End of Filling	
Depth from Surface to Water (D_{TW})	0.600m	Depth below Surface to Water (D_{TW})		Depth below Surface to Water (D_{TW})	
Water Depth (W_D)	1.000m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	1.200m³	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit		Gravel used to backfill Test Pit	
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	1.200m³	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway				**Time to soakaway**				**Time to soakaway**			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	11.190	0.600	0								
1	11.200	0.600	60								
1	11.210	0.600	120								
1	11.220	0.600	180								
1	11.230	0.600	240								
1	11.240	0.600	300								
1	11.250	0.600	360								
1	11.300	0.600	660								
1	11.400	0.600	1260								
1	11.500	0.600	1860								
1	12.000	0.600	2460								
1	12.100	0.600	3060								
1	12.200	0.600	3660								
1	12.300	0.600	4260								
1	13.000	0.600	6060								
1	13.300	0.600	7860								
1	14.000	0.600	9660								
1	14.300	0.600	11460								
1	15.000	0.600	13260								
1	15.300	0.600	15060								
1	15.300	0.600	15060								
1	15.300	0.600	15060								
1	15.300	0.600	15060								

25% water loss (75% full)	0.850m	**25% water loss (75% full)**	-	**25% water loss (75% full)**	-
50% water loss (50% full)	1.100m	**50% water loss (50% full)**	-	**50% water loss (50% full)**	-
75% water loss (25% full)	1.350m	**75% water loss (25% full)**	-	**75% water loss (25% full)**	-
25% time (seconds)	-	**25% time (seconds)**	-	**25% time (seconds)**	-
75% time (seconds)	-	**75% time (seconds)**	-	**75% time (seconds)**	-
Vp 75-25	0.600m³	**Vp 75-25**	-	**Vp 75-25**	-
ap 50 (Actual area from test)	3.800m³	**ap 50 (Actual area from test)**	-	**ap 50 (Actual area from test)**	-
tp 75 - 25		**tp 75 - 25**		**tp 75 - 25**	
Soil Infiltration Rate	-	**Soil Infiltration Rate**	-	**Soil Infiltration Rate**	-



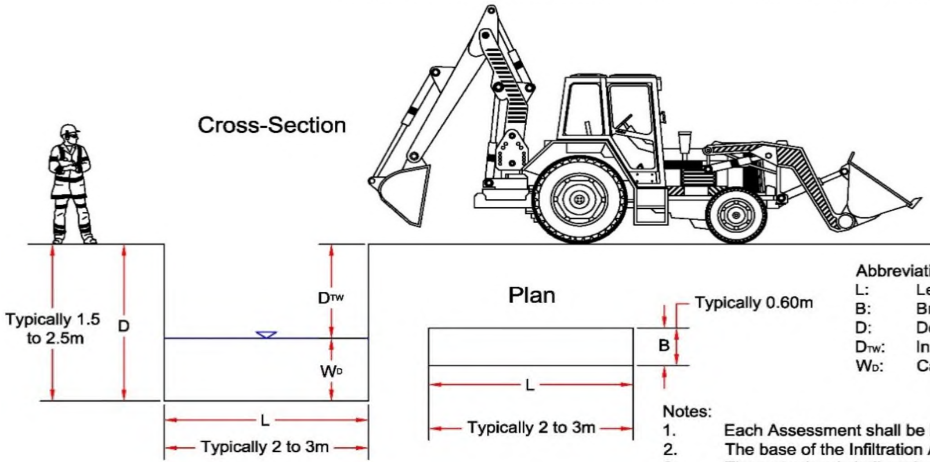
Form completed by		
Tested By	PRINT	Russell Sumner
	SIGN	Russell Sumner
	DATE	24/08/2021
Calculated By	PRINT	Russell Sumner
	SIGN	Russell Sumner
	DATE	14/10/2021
Checked by	PRINT	Adam Cheers
	SIGN	Adam Cheers
	DATE	15/10/2021

1 DAY INFILTRATION ASSESSMENT - AIDE MEMOIR

Site: Garth Wymott 2
Client: Ministry of Justice
Test Location SA106 **Date of start** 27/08/2021 **Date at end** 27/08/2021

ANTICIPATED GROUND PROFILE FROM DESK STUDY		ACTUAL GROUND PROFILE FROM EXCAVATION	
GROUND LEVEL		GROUND LEVEL	
		0.00-0.30	TOPSOIL
		0.30-0.65	MADE GROUND
		0.65-1.50	GLACIAL TILL- Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY.
BASE OF PIT		BASE OF PIT	1.50m bgl

INFILTRATION ASSESSMENT PIT TYPICAL DIMENSIONS



ACTUAL DIMENSIONS			
L			
B			
D			
D_{TW}			
W_D			

Abbreviations:
L: Length of Infiltration Assessment Pit.
B: Breadth / Width of Infiltration Assessment Pit.
D: Depth of Infiltration Assessment Pit.
D_{TW}: Initial Depth to Top of Water.
W_D: Calculated Water Depth.

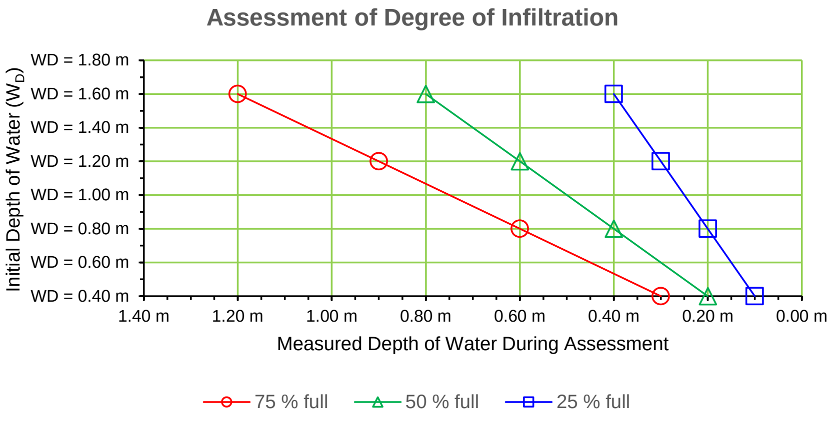
Notes:
1. Each Assessment shall be limited to a single stratum.
2. The base of the Infiltration Assessment Pit shall be below all Made Ground,
3. The water level shall not be raised above the base of the Made Ground.
4. The base of the Infiltration Assessment Pit shall be at least 1m into the stratum which is to be assessed.
5. The base of the Infiltration Assessment Pit shall be above the Water Table.
6. Minimum target depth of water of 1.0m.
7. Where any of the above conditions cannot be met, it shall be reported immediately to the Project Manager for additional guidance before the test is commenced.

Calculated Water Depth (W_D) $= D - D_{TW}$

Maximum Fill Volume (V_w) $= W_D \times B \times L$

Corrected Water Volume (V_{wc}) $= V_w \times$ Gravel Porosity (P_f)

Infiltration	RUN 1		RUN 2		RUN 3	
	W_D		W_D		W_D	
	W_{D1}	D_{TW1}	W_{D2}	D_{TW2}	W_{D3}	D_{TW3}
75% full	0.75	0.75				
25% full	0.25	1.25				



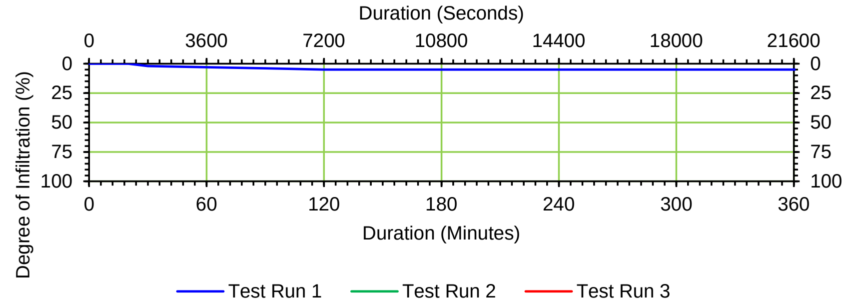
SITE OBSERVATIONS - VOLUME LOSS

Test Run	Infiltration Records up to 6 Hours	Comments
1	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Refer to results of Run 2
2	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Refer to results of Run 3
3	<25%	Unlikely without significant attenuation
	<75%	Requires additional BRE DG365 testing
	>75%	Indicative Infiltration Rate achieved.

1 DAY INFILTRATION ASSESSMENT - WORKSHEET

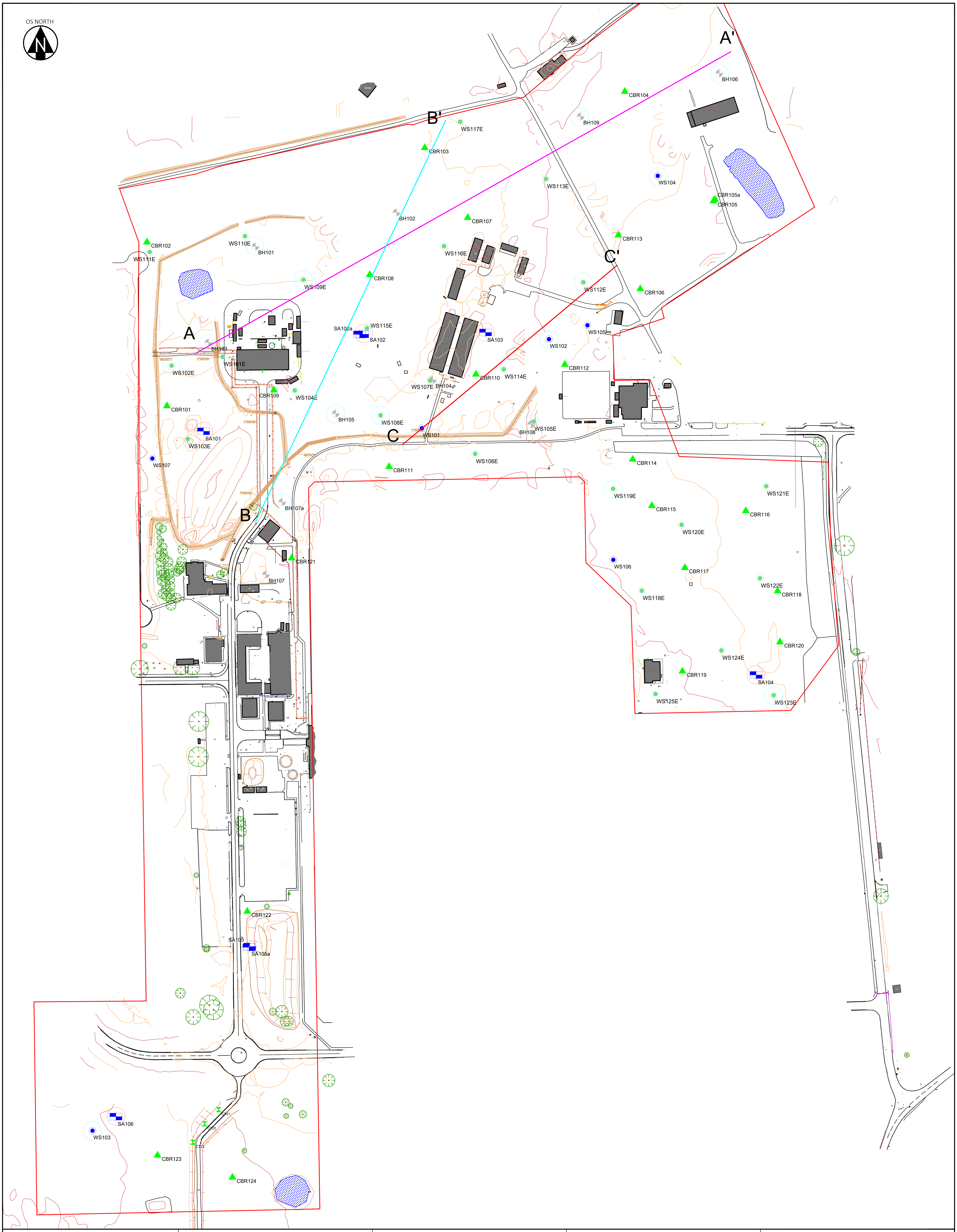
Site: Garth Wymott 2
Client: Pick Everard
Test Location SA106 **Date of start** 27/08/2021 **Date at end** 27/08/2021

Test Run 1				Test Run 2				Test Run 3			
Pit Dimensions (m)				**Pit Dimensions (m)**				**Pit Dimensions (m)**			
Trial Pit Length (L)			2.000m	Trial Pit Length (L)				Trial Pit Length (L)			
Trial Pit Breadth / Width (B)			0.600m	Trial Pit Breadth / Width (B)				Trial Pit Breadth / Width (B)			
Effective Depth (D)			1.500m	Effective Depth (D)				Effective Depth (D)			
Time at Start of Filling			8.57	Time at Start of Filling				Time at Start of Filling			
Time at End of Filling			9.00	Time at End of Filling				Time at End of Filling			
Depth from Surface to Water (D_{TW})			0.500m	Depth below Surface to Water (D_{TW})				Depth below Surface to Water (D_{TW})			
Water Depth (W_D)			1.000m	Water Depth (W_D)			-	Water Depth (W_D)			-
Maximum Fill Volume (V_W)			1.200m^3	Maximum Fill Volume (V_W)			-	Maximum Fill Volume (V_W)			-
Gravel used to backfill Test Pit			No	Gravel used to backfill Test Pit				Gravel used to backfill Test Pit			
Porosity of Gravel Backfill (P_t)				Porosity of Gravel Backfill (P_t)				Porosity of Gravel Backfill (P_t)			
Corrected Water Volume (V_{WC})			1.200m^3	Corrected Water Volume (V_{WC})			-	Corrected Water Volume (V_{WC})			-
Time to soakaway				**Time to soakaway**				**Time to soakaway**			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	9.000	0.500	0								
1	9.010	0.500	60								
1	9.020	0.500	120								
1	9.030	0.500	180								
1	9.040	0.500	240								
1	9.050	0.500	300								
1	9.100	0.500	600								
1	9.200	0.500	1200								
1	9.300	0.520	1800								
1	10.000	0.530	3600								
1	10.300	0.540	5400								
1	11.000	0.550	7200								
1	12.000	0.550	10800								
1	13.000	0.550	14400								
1	14.000	0.550	18000								
1	15.000	0.550	21600								
1	16.000	0.550	25200								
1	16.000	0.550	25200								
1	16.000	0.550	25200								
1	16.000	0.550	25200								
1	16.000	0.550	25200								
1	16.000	0.550	25200								
1	16.000	0.550	25200								
25% water loss (75% full)			0.750m	**25% water loss (75% full)**			-	**25% water loss (75% full)**			-
50% water loss (50% full)			1.000m	**50% water loss (50% full)**			-	**50% water loss (50% full)**			-
75% water loss (25% full)			1.250m	**75% water loss (25% full)**			-	**75% water loss (25% full)**			-
25% time (seconds)			-	**25% time (seconds)**			-	**25% time (seconds)**			-
75% time (seconds)			-	**75% time (seconds)**			-	**75% time (seconds)**			-
Vp 75-25			0.600m^3	**Vp 75-25**			-	**Vp 75-25**			-
ap 50 (Actual area from test)			3.800m^3	**ap 50 (Actual area from test)**			-	**ap 50 (Actual area from test)**			-
tp 75 - 25				**tp 75 - 25**				**tp 75 - 25**			
Soil Infiltration Rate		-		**Soil Infiltration Rate**		-		**Soil Infiltration Rate**		-	



Form completed by		
Tested By	PRINT	Russell Sumner
	SIGN	Russell Sumner
	DATE	27/08/2021
Calculated By	PRINT	Russell Sumner
	SIGN	Russell Sumner
	DATE	14/10/2021
Checked by	PRINT	Adam Cheers
	SIGN	Adam Cheers
	DATE	15/10/2021

Cross Section Drawing and Sections



KEY

HYDROCK (2021)

—	SITE BOUNDARY
▨ TPXXX	TRIAL PIT
⧗ CTXX	HAND DUG TRIAL PIT
◐ BHXXX	BOREHOLE
● WSXXX	WINDOW SAMPLE
▲ CBRXXX	CBR TESTING
○	SOAKAWAY INFILTRATION TEST
○	BOREHOLE INSTALLATION

E3P (2020)

● WSXXX	WINDOW SAMPLE

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information: Centara, June 2021, 'Topographical and Utility Survey of Areas of Interest', Drawing Reference CEN-GHX0000-XX-SU-X-1000_S3_P03 Sheets 1 to 22.

P01	FIRST ISSUE					
	RS	14/10/21	AC	15/10/21	DH	15/10/21
REV.	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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CLIENT
MINISTRY OF JUSTICE

PROJECT
GARTH WYMOTT 2

TITLE
CROSS SECTION PLAN

HYDROCK PROJECT NO.
C-19851-C

SCALE @ A1
1:750

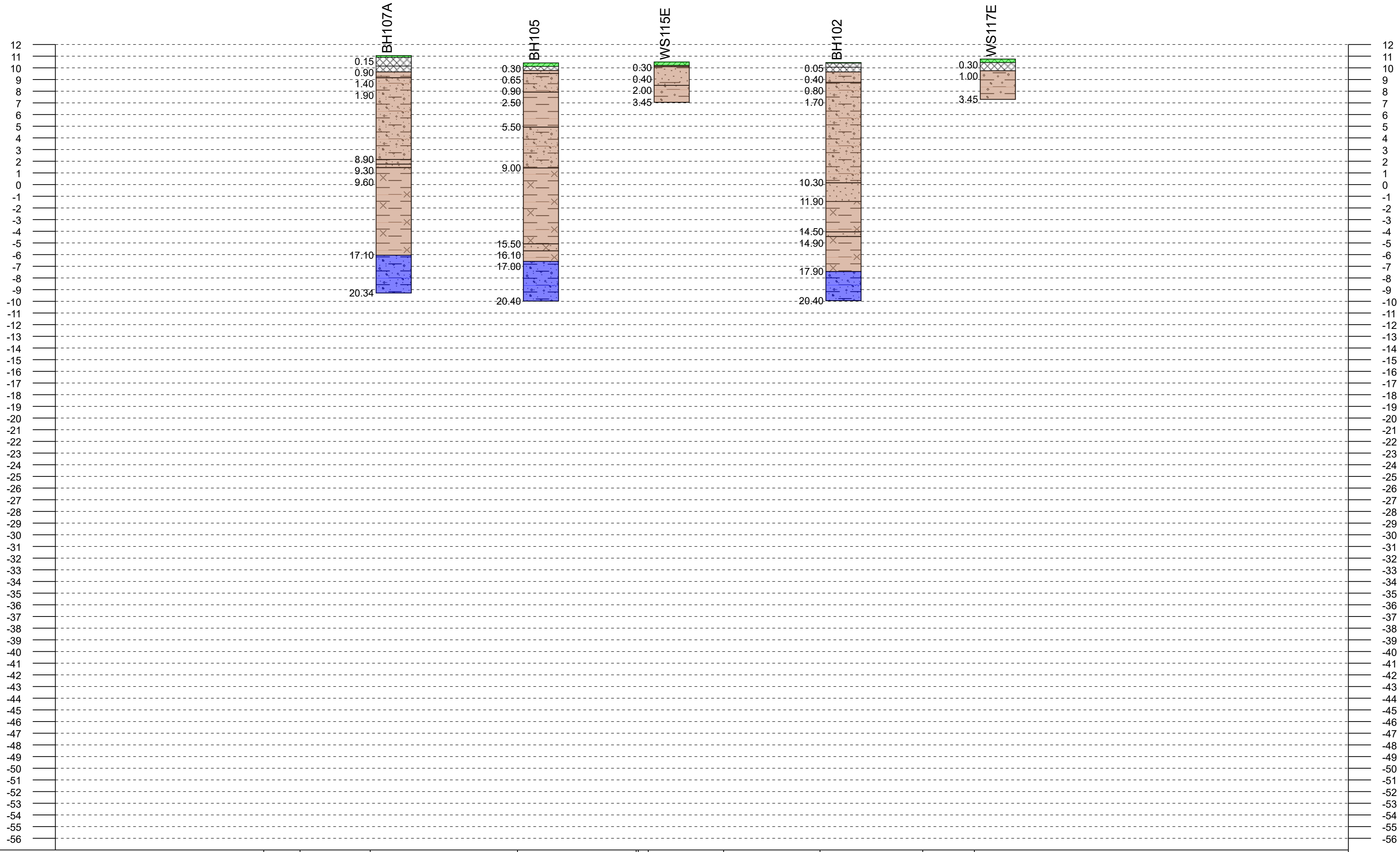
PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
19851-HYD-XX-XX-DR-GE-0007

REVISION
P01

Project ID:	C-19851	Title:	South West to North East
Project Title:	Garth Wymott 2	Document Reference:	Figure B to B'
Location:	Leyland, Lancashire	Horizontal Scale:	1:3250
Client:	Ministry of Justice	Vertical Scale:	1:500



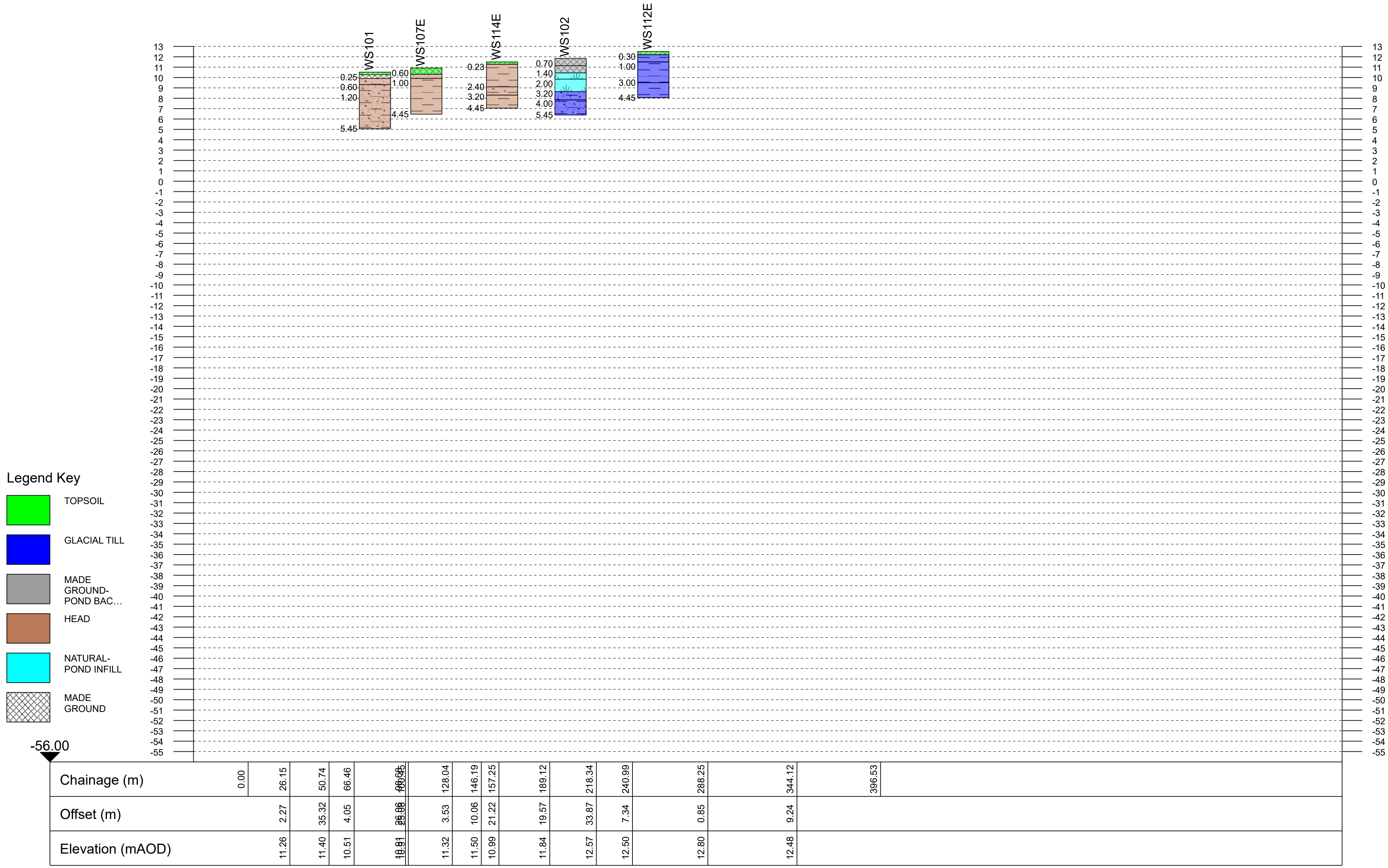
Legend Key

- 🟩 TOPSOIL
- ▨ MADE GROUND
- 🟫 HEAD
- 🟦 GLACIAL TILL

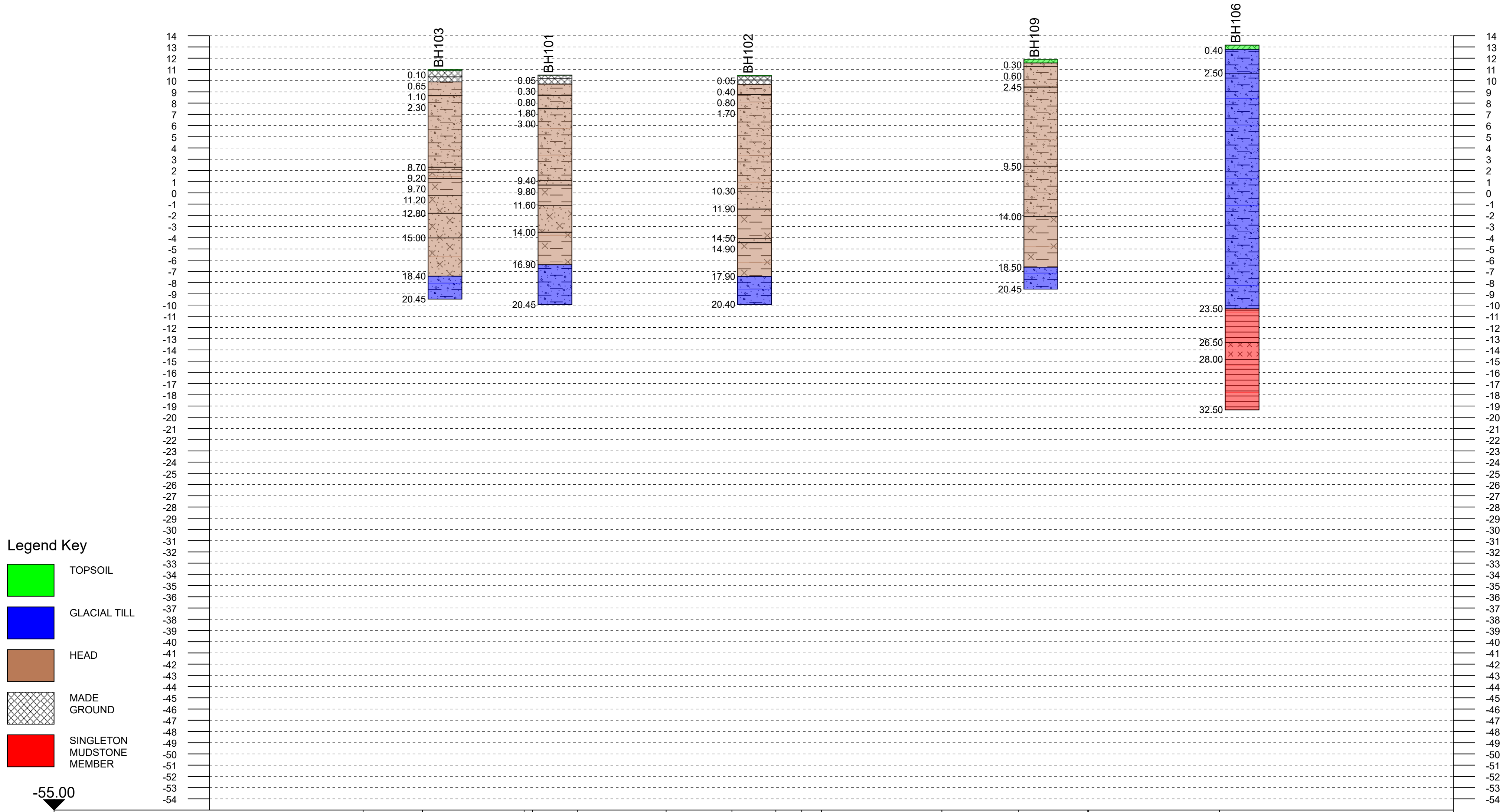
-57.00

Chainage (m)	81.81	102.03	141.14	223.16	[illegible]	295.98	337.98	391.66	448.88	477.65	
Offset (m)	9.24	4.69	16.95	1.42	[illegible]	1.48	14.28	11.14	7.97	11.84	
Elevation (mAOD)	10.90	10.59	11.05	10.42	[illegible]	10.50	10.66	10.45	10.75	10.75	

Project ID:	C-19851	Title:	South West to North East
Project Title:	Garth Wymott 2	Document Reference:	Figure C to C'
Location:	Leyland, Lancashire	Horizontal Scale:	1:3250
Client:	Ministry of Justice	Vertical Scale:	1:500



Project ID:	C-19851	Title:	West to East
Project Title:	Garth Wymott 2	Document Reference:	Figure A to A'
Location:	Leyland, Lancashire	Horizontal Scale:	1:3250
Client:	Ministry of Justice	Vertical Scale:	1:500



Chainage (m)	54.70	89.05	147.91 152.71	178.68	230.13	268.23	293.67	308.70	320.13	389.81	434.04	474.86 474.37	550.57
Offset (m)	44.92	38.41	29.98 18.96	19.89	35.10	2.86	36.47	43.43	21.51	16.53	19.87	46.20 25.10	11.03
Elevation (mAOD)	10.80	10.98	12.00 10.49	10.50	10.66	10.45	10.40	10.75	10.34	10.50	11.87	12.98 11.93	13.16

Exploratory Hole Photographs

Site Investigation Photograph 1

Date: 26/08/2021

Direction Photograph Taken: n/a.

Description: BH106 rock core from 23.50m to 32.50m bgl.

Site Investigation Photograph 2

Date: 25/08/21

Direction Photograph Taken: n/a.

Description: BH107 concrete obstruction encountered down to 1.20m bgl.

<table>
<tr><td>Site Investigation Photograph 3</td><td rowspan="4">
HOLE ID WS102
PROJECT ID C-19851
PROJECT NAME HMP WYMOTT
DATE 23/8/2021
DEPTH FROM 0.00 m TO 1.20 m</td></tr>
<tr><td>Date: 25/08/2021</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: WS102 0.00m to 1.20m bgl.</td></tr>
</table>

<table>
<tr><td>Site Investigation Photograph 4</td><td rowspan="4">
HOLE ID WS102
PROJECT ID C-19851
PROJECT NAME HMP WYMOTT
DATE 23/8/2021
DEPTH FROM 1.20 m TO 5.00 m</td></tr>
<tr><td>Date: 23/08/21</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: WS102 1.20m to 5.00m bgl.</td></tr>
</table>

<table>
<tr><td>Site Investigation Photograph 5</td><td rowspan="4">
</td></tr>
<tr><td>Date: 23/08/21</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: WS101 0.00m to 1.20m bgl.</td></tr>
</table>

<table>
<tr><td>Site Investigation Photograph 6</td><td rowspan="4">
</td></tr>
<tr><td>Date: 23/08/21</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: WS101 1.20m to 5.00m bgl.</td></tr>
</table>

Site Investigation Photograph 7

Date: 25/08/2021

Direction Photograph Taken: n/a.

Description: WS103 1.20m to 2.50m bgl.

Site Investigation Photograph 8

Date: 23/08/21

Direction Photograph Taken: n/a.

Description: WS105 1.20m to 5.00m bgl.

Site Investigation Photograph 9

Date: 22/08/21

Direction Photograph Taken: n/a.

Description: SA101 arisings.

Site Investigation Photograph 10

Date: 22/08/21

Direction Photograph Taken: n/a.

Description: SA101 long wall (1.80m bgl.).

Site Investigation Photograph 11

Date: 22/08/21

Direction Photograph Taken: n/a.

Description: SA101 short wall (1.80m bgl).

Site Investigation Photograph 12

Date: 27/08/21

Direction Photograph Taken: n/a.

Description: SA105 arisings.

Site Investigation Photograph 13	
Date: 27/08/21	
Direction Photograph Taken: n/a.	
Description: SA105 short wall (1.50m bgl)	

Site Investigation Photograph 14	
Date: 27/08/21	
Direction Photograph Taken: n/a.	
Description: SA105 long wall (1.50m bgl)	

Site Investigation Photograph 15	
Date: 27/08/21	
Direction Photograph Taken: n/a.	
Description: SA105 long wall (1.20m bgl)	

Site Investigation Photograph 16	
Date: 27/08/21	
Direction Photograph Taken: n/a.	
Description: SA105 short wall (1.20m bgl)	

Site Investigation Photograph 17

Date: 27/08/21

Direction Photograph Taken: n/a.

Description: SA106 arisings.

Site Investigation Photograph 18

Date: 27/08/21

Direction Photograph Taken: n/a.

Description: SA106 long wall (1.50m bgl)

Site Investigation Photograph 19	
Date: 27/08/21	
Direction Photograph Taken: n/a.	
Description: SA106 short wall (1.50m bgl)	

Site Investigation Photograph 20	
Date: 26/08/21	
Direction Photograph Taken: n/a.	
Description: SA102 long wall (1.65m bgl)	

Site Investigation Photograph 21

Date: 26/08/21

Direction Photograph Taken: n/a.

Description: SA103 arisings.

Site Investigation Photograph 22

Date: 26/08/21

Direction Photograph Taken: n/a.

Description: SA103 long wall (1.50m bgl)

Appendix C Geotechnical Test Results and Geotechnical Plots

Hydrock Geotechnical Laboratory Test Results

UKAS TESTING
4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Analytical i2 Environmental Science

Client: Hydrock Consultants Ltd

Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY

Contact: Russell Sumner

Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 17/09/2021
Sampled By: i2 - R.S

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

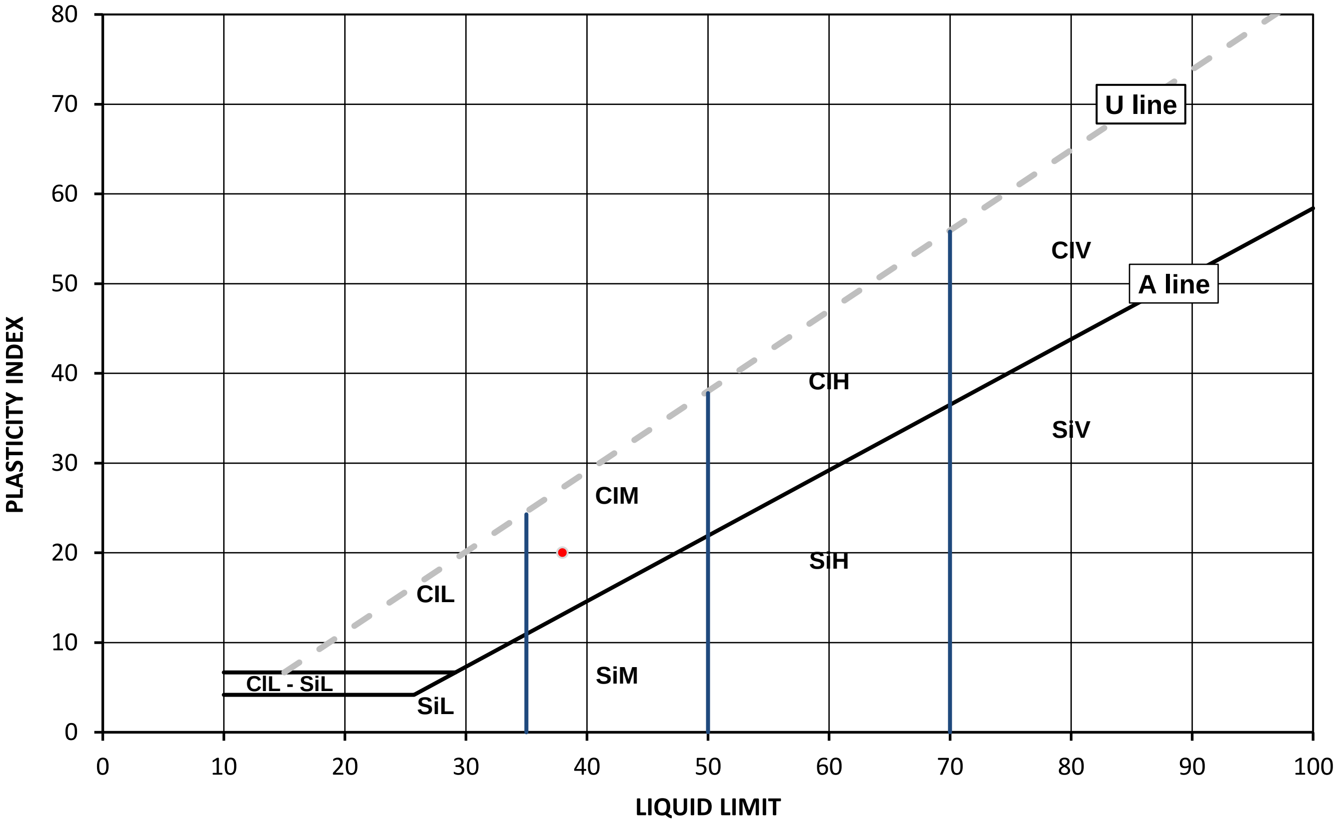
Test Results:

Laboratory Reference: 2006859
Hole No.: BH108
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 4.00
Depth Base [m]: 4.45
Sample Type: U

Sample Preparation: Tested after >425um removed by hand

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425μm BS Test Sieve
20	38	18	20	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

Cl Clay
Si Silt

	Plasticity	Liquid Limit
L	Low	below 35
M	Medium	35 to 50
H	High	50 to 70
V	Very high	exceeding 70
O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 17/09/2021
Sampled By: i2 - R.S

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

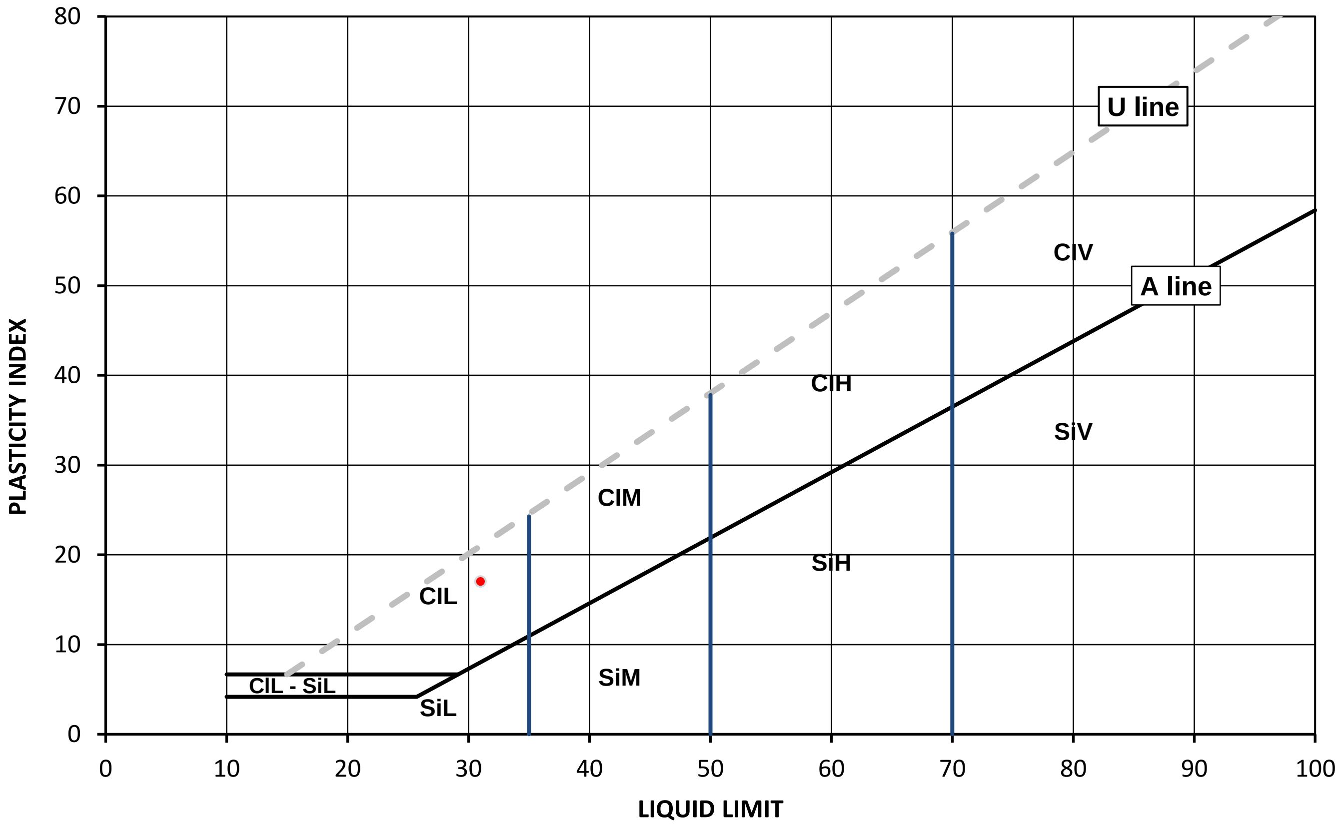
Test Results:

Laboratory Reference: 2006865
Hole No.: BH107A
Sample Reference: Not Given
Sample Description: Brown slightly gravelly very sandy CLAY

Sample Preparation: Tested after >425um removed by hand

Depth Top [m]: 6.50
Depth Base [m]: 6.95
Sample Type: U

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
17	31	14	17	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Environmental Science

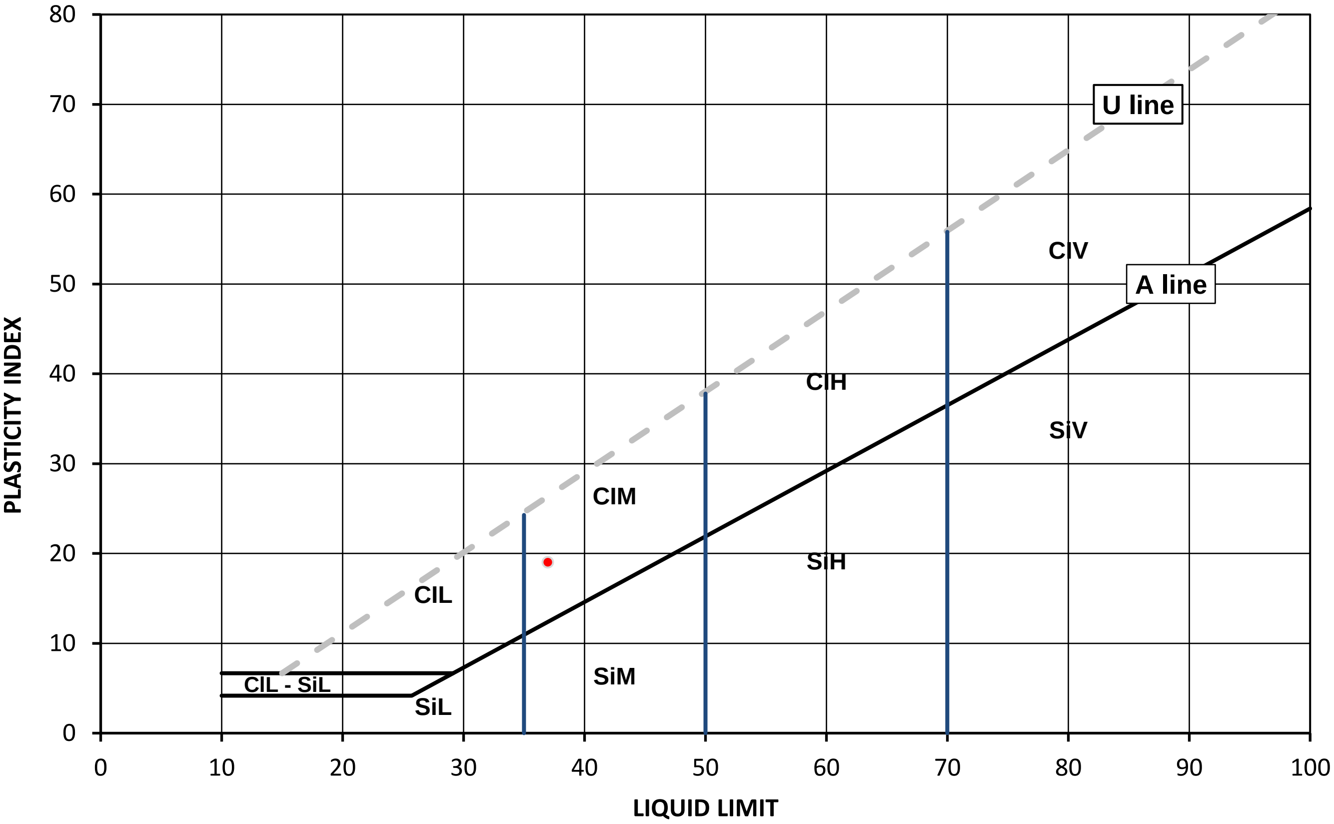
Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	21/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

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

Test Results:

Laboratory Reference:	2006868	Depth Top [m]:	1.20
Hole No.:	BH106	Depth Base [m]:	1.65
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Greyish brown sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	37	18	19	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

				Plasticity	Liquid Limit
Cl	Clay	L	Low		below 35
Si	Silt	M	Medium		35 to 50
		H	High		50 to 70
		V	Very high		exceeding 70
		O	Organic		append to classification for organic material (eg ClHO)

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

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 21/09/2021
Sampled By: i2 - R.S

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

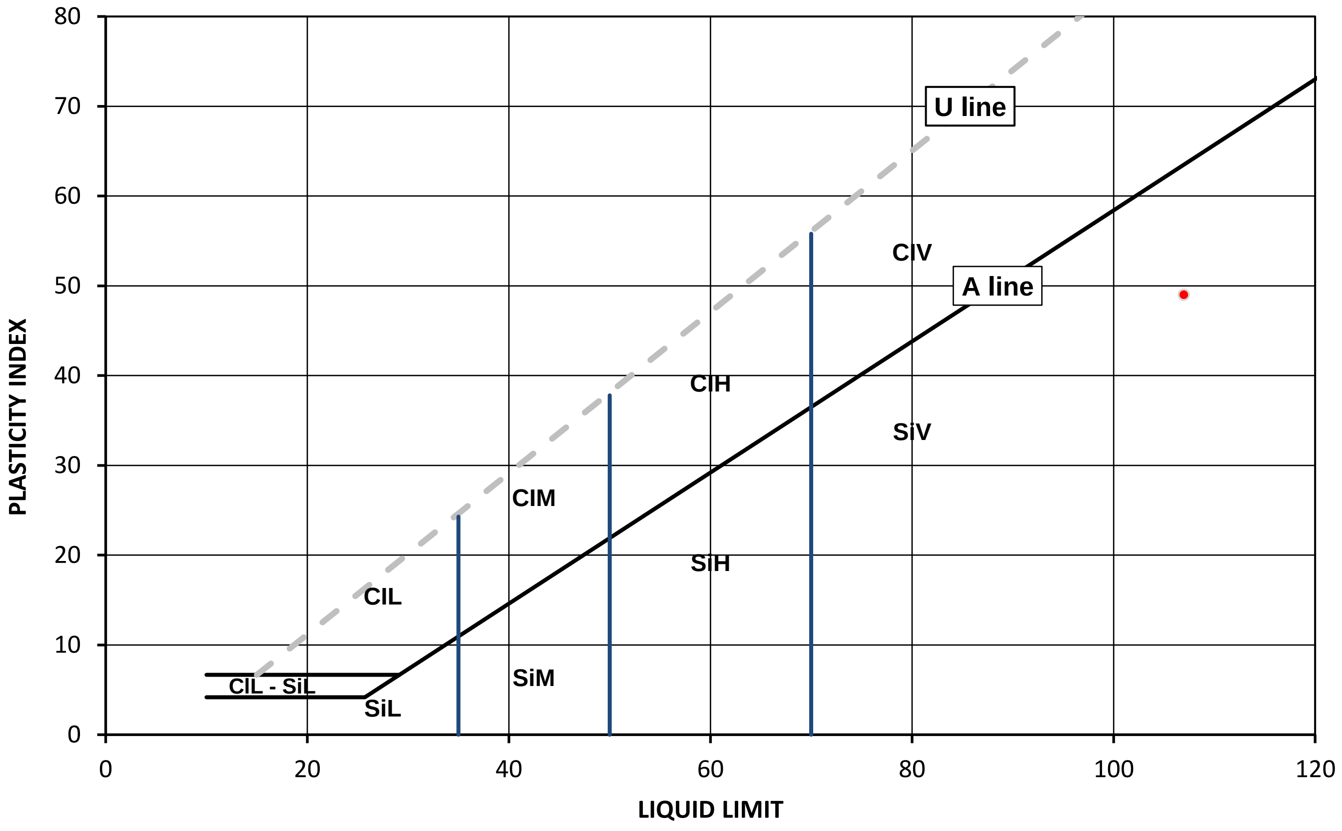
Test Results:

Laboratory Reference: 2006869
Hole No.: WS102
Sample Reference: 4
Sample Description: Dark grey slightly gravelly organic CLAY

Sample Preparation: Tested after >425um removed by hand

Depth Top [m]: 2.00
Depth Base [m]: 2.45
Sample Type: D

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
115	107	58	49	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS TESTING
4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 21/09/2021
Sampled By: i2 - R.S

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

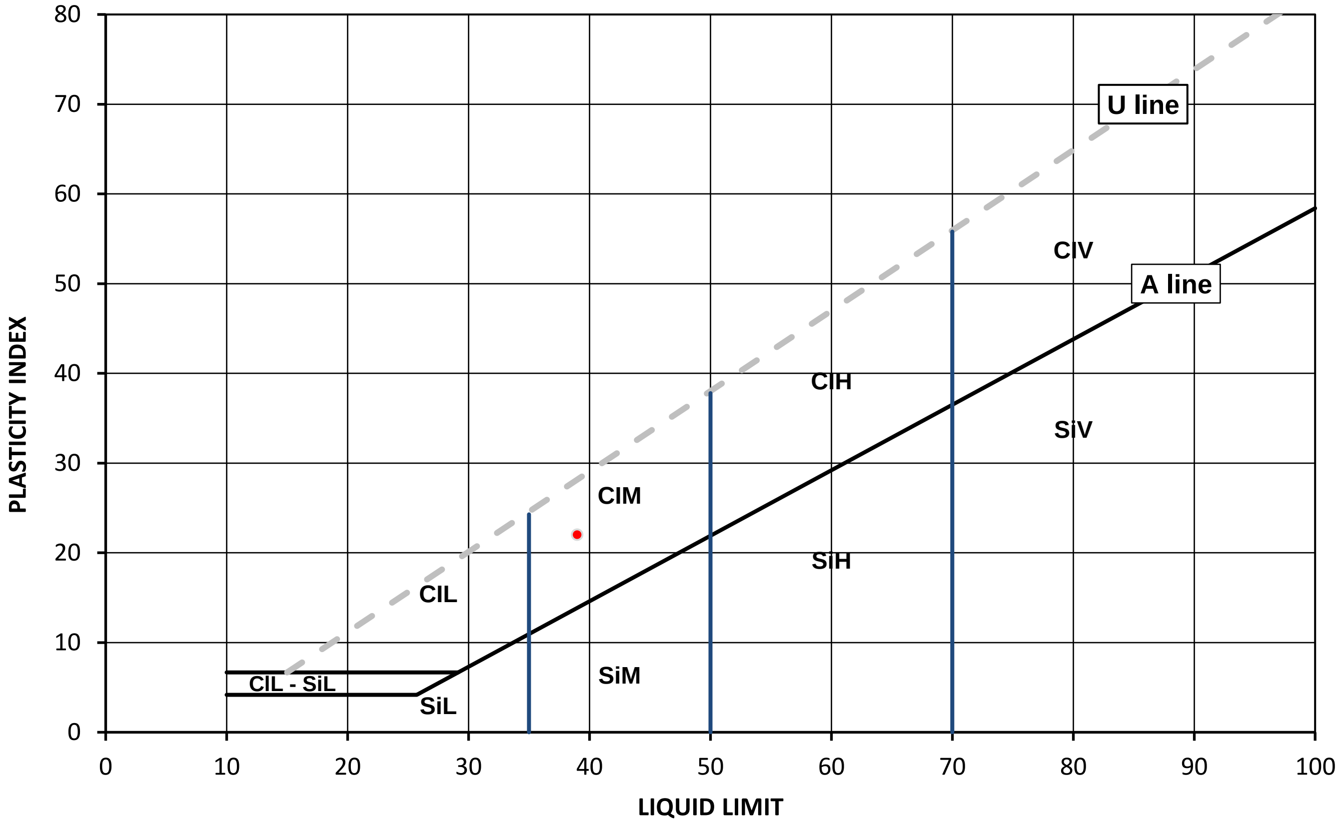
Test Results:

Laboratory Reference: 2006870
Hole No.: WS102
Sample Reference: 7
Sample Description: Brown mottled dark grey slightly gravelly sandy CLAY with fragments of wood

Depth Top [m]: 3.00
Depth Base [m]: 3.45
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	39	17	22	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed:
Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 21/09/2021
Sampled By: i2 - R.S

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

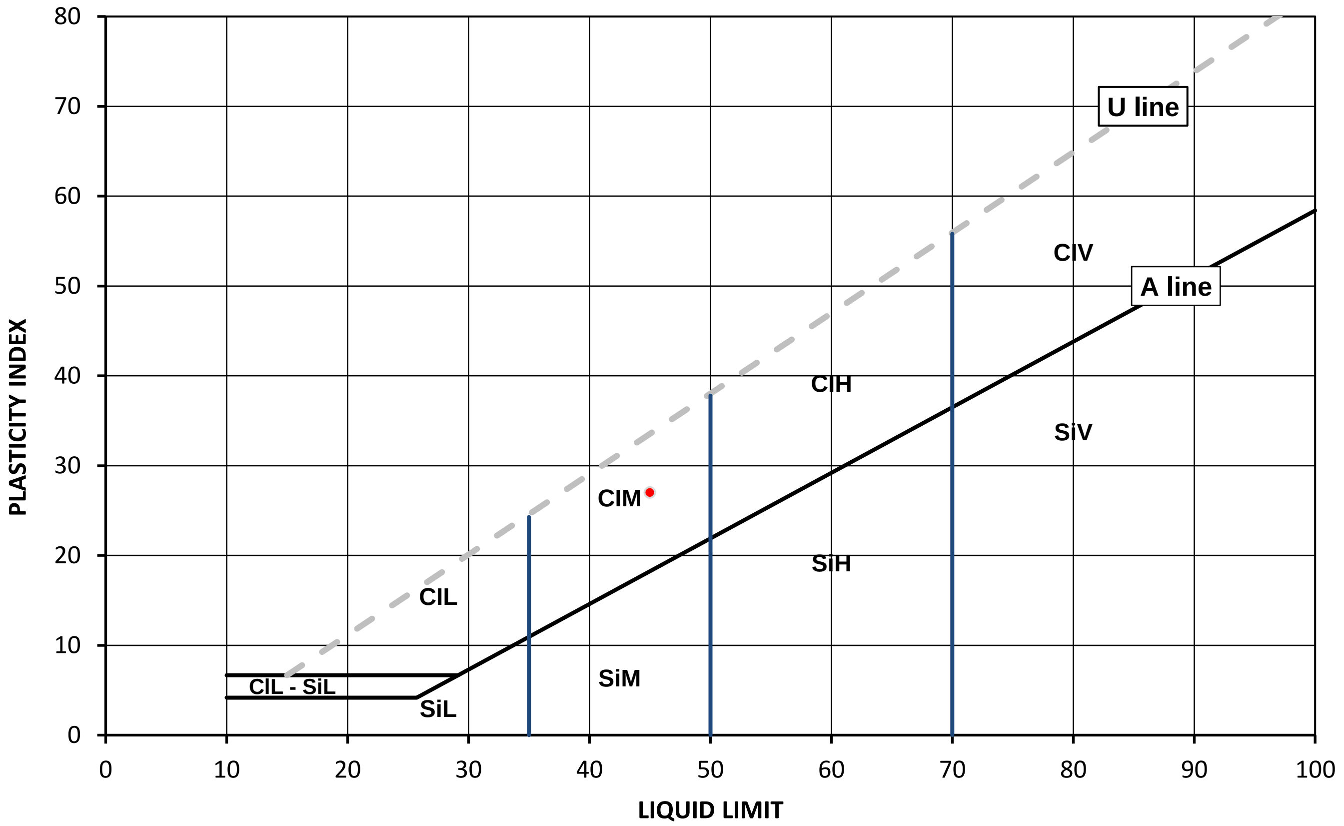
Test Results:

Laboratory Reference: 2006871
Hole No.: WS105
Sample Reference: 3
Sample Description: Brown slightly gravelly slightly sandy CLAY

Sample Preparation: Tested after >425um removed by hand

Depth Top [m]: 1.20
Depth Base [m]: 1.65
Sample Type: D

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	45	18	27	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

				Plasticity		Liquid Limit
Cl	Clay			L	Low	below 35
Si	Silt			M	Medium	35 to 50
				H	High	50 to 70
				V	Very high	exceeding 70
				O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS
TESTING
4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 21/09/2021
Sampled By: i2 - R.S

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

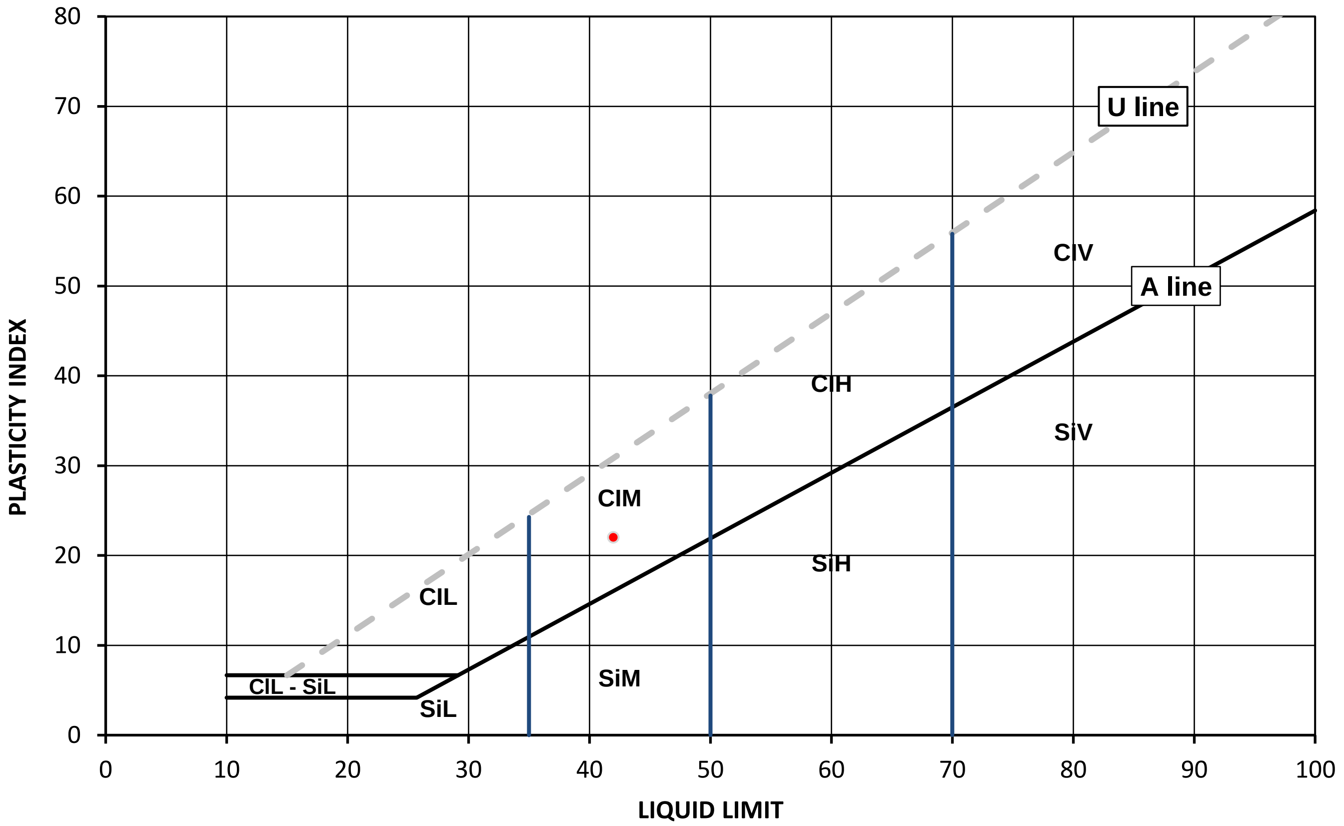
Test Results:

Laboratory Reference: 2006872
Hole No.: WS105
Sample Reference: 5
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 2.00
Depth Base [m]: 2.45
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	42	20	22	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Environmental Science

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	21/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

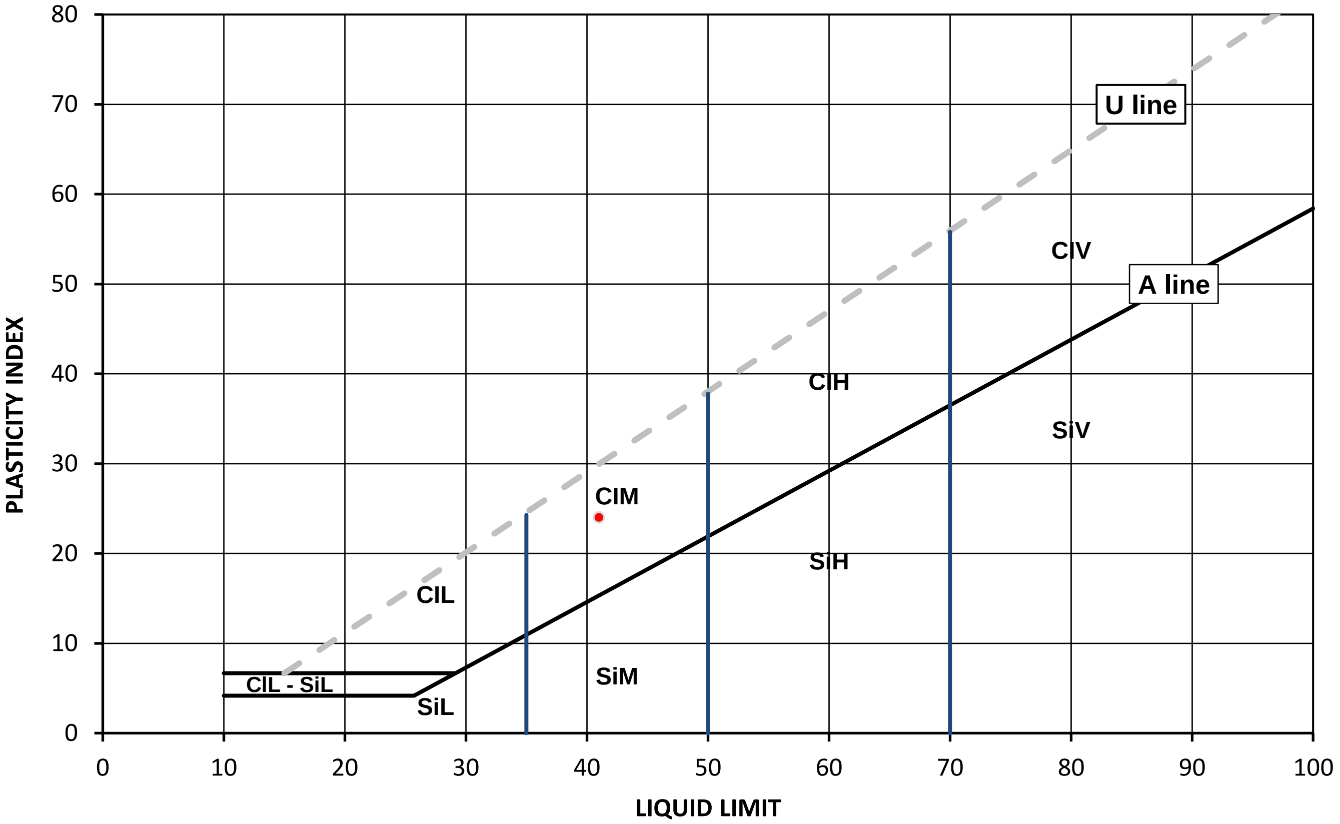
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2006873	Depth Top [m]:	2.00
Hole No.:	WS106	Depth Base [m]:	2.45
Sample Reference:	4	Sample Type:	D
Sample Description:	Brown sandy CLAY		

Sample Preparation: Tested in natural condition

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
17	41	17	24	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

				Plasticity	Liquid Limit
Cl	Clay	L	Low		below 35
Si	Silt	M	Medium		35 to 50
		H	High		50 to 70
		V	Very high		exceeding 70
		O	Organic		append to classification for organic material (eg ClHO)

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

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS TESTING 4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Analytical i2 Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 21/09/2021
Sampled By: i2 - R.S

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

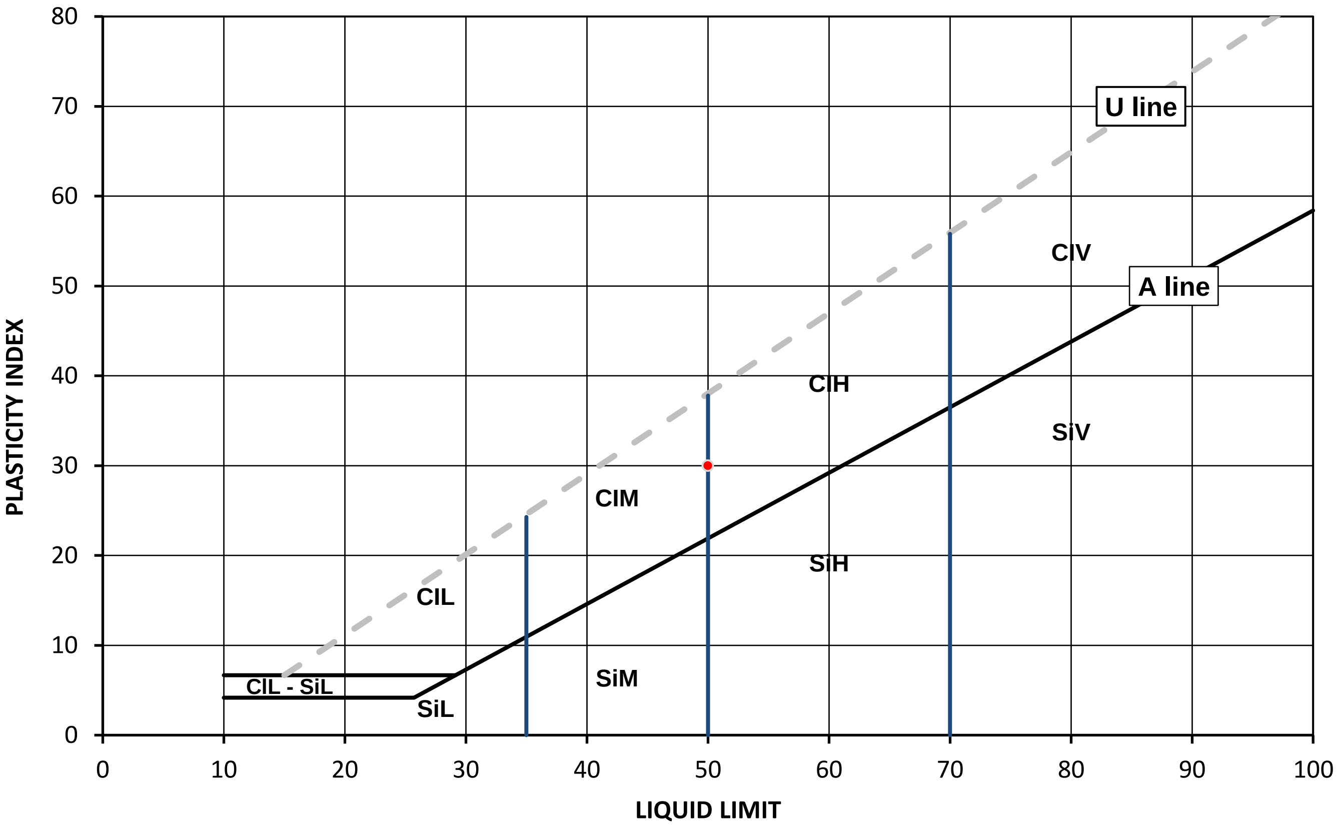
Test Results:

Laboratory Reference: 2006874
Hole No.: WS103
Sample Reference: Not Given
Sample Description: Brown mottled grey slightly gravelly slightly sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: 1.65
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	50	20	30	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 21/09/2021
Sampled By: i2 - R.S

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

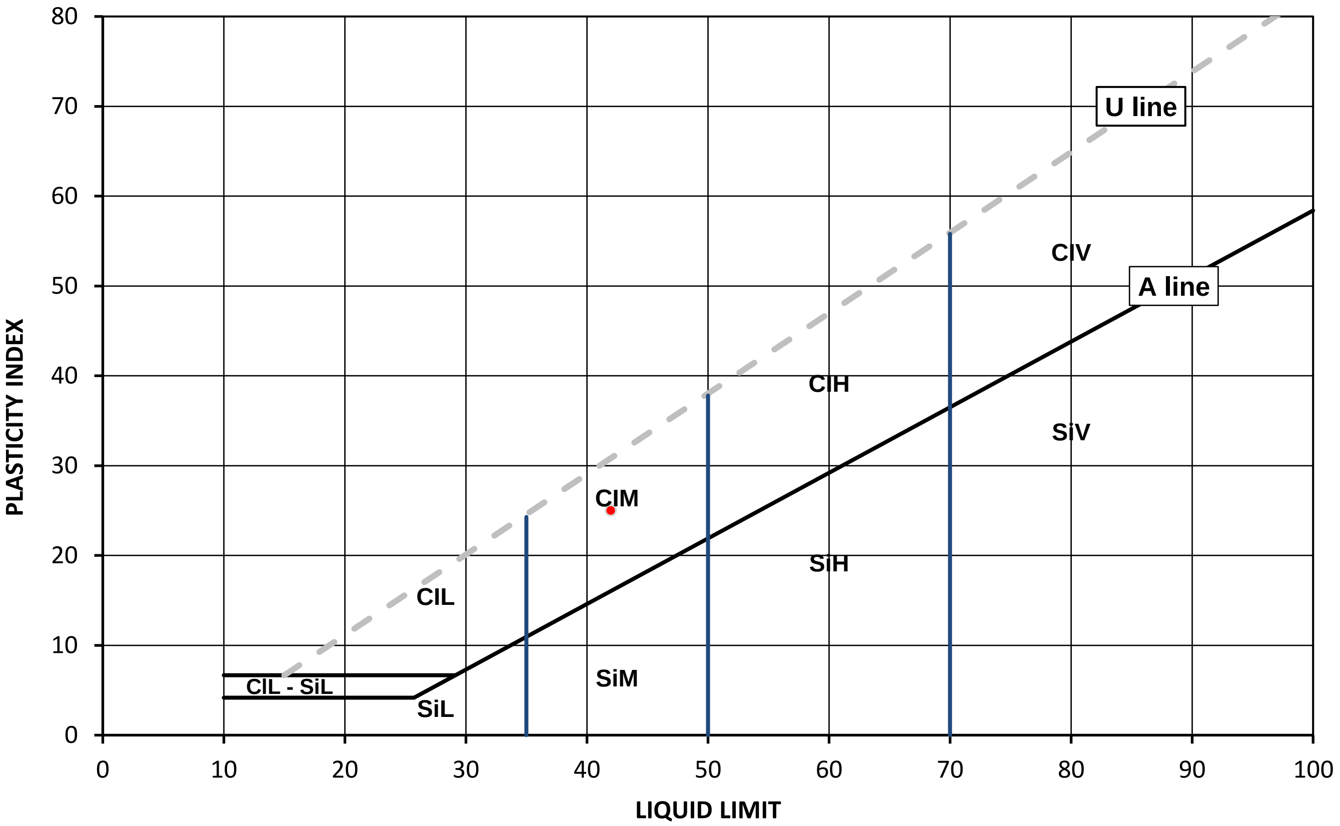
Test Results:

Laboratory Reference: 2006875
Hole No.: BH106
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 2.00
Depth Base [m]: 2.45
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	42	17	25	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

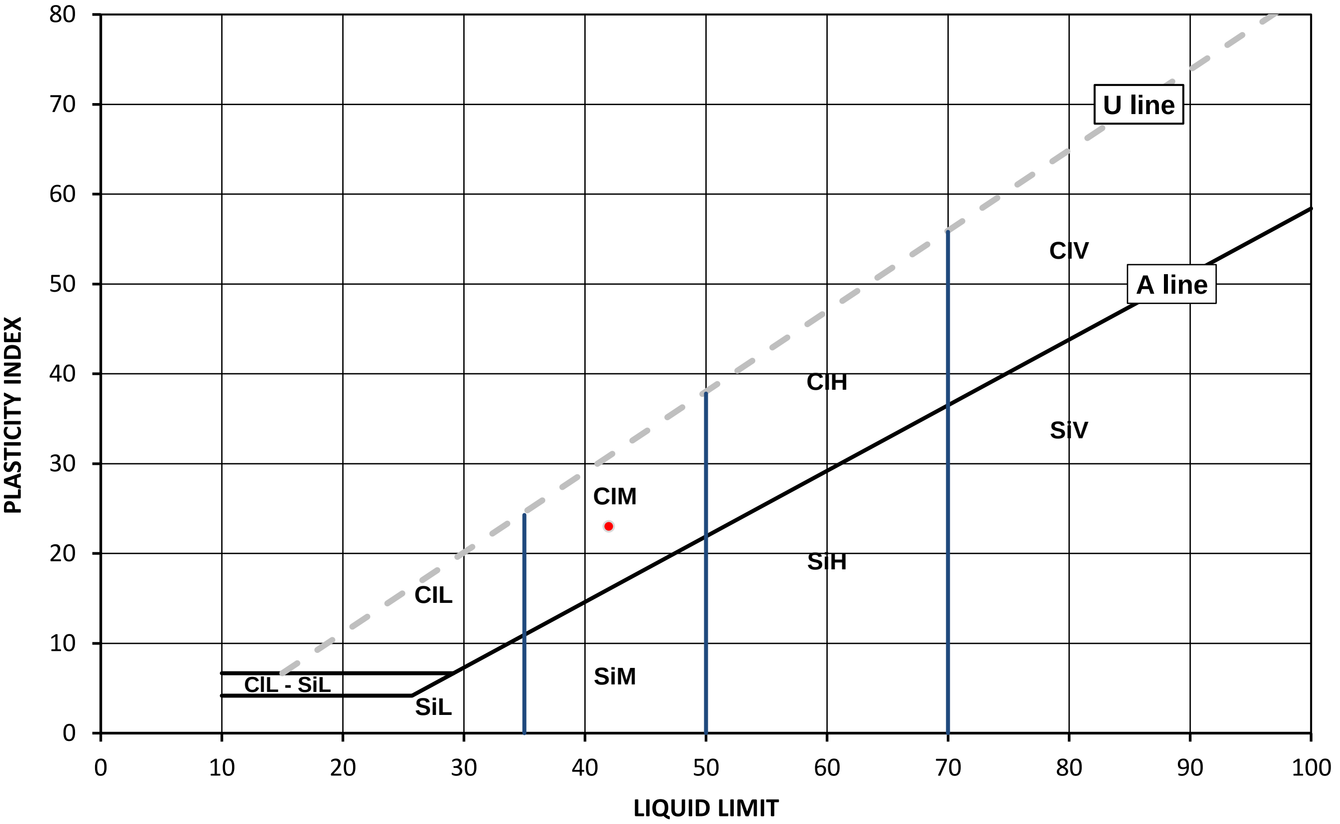
Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	21/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

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

Test Results:

Laboratory Reference:	2006876	Depth Top [m]:	1.20
Hole No.:	BH105	Depth Base [m]:	1.65
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425μm BS Test Sieve
19	42	19	23	96



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS TESTING
4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Analytical i2 Environmental Science

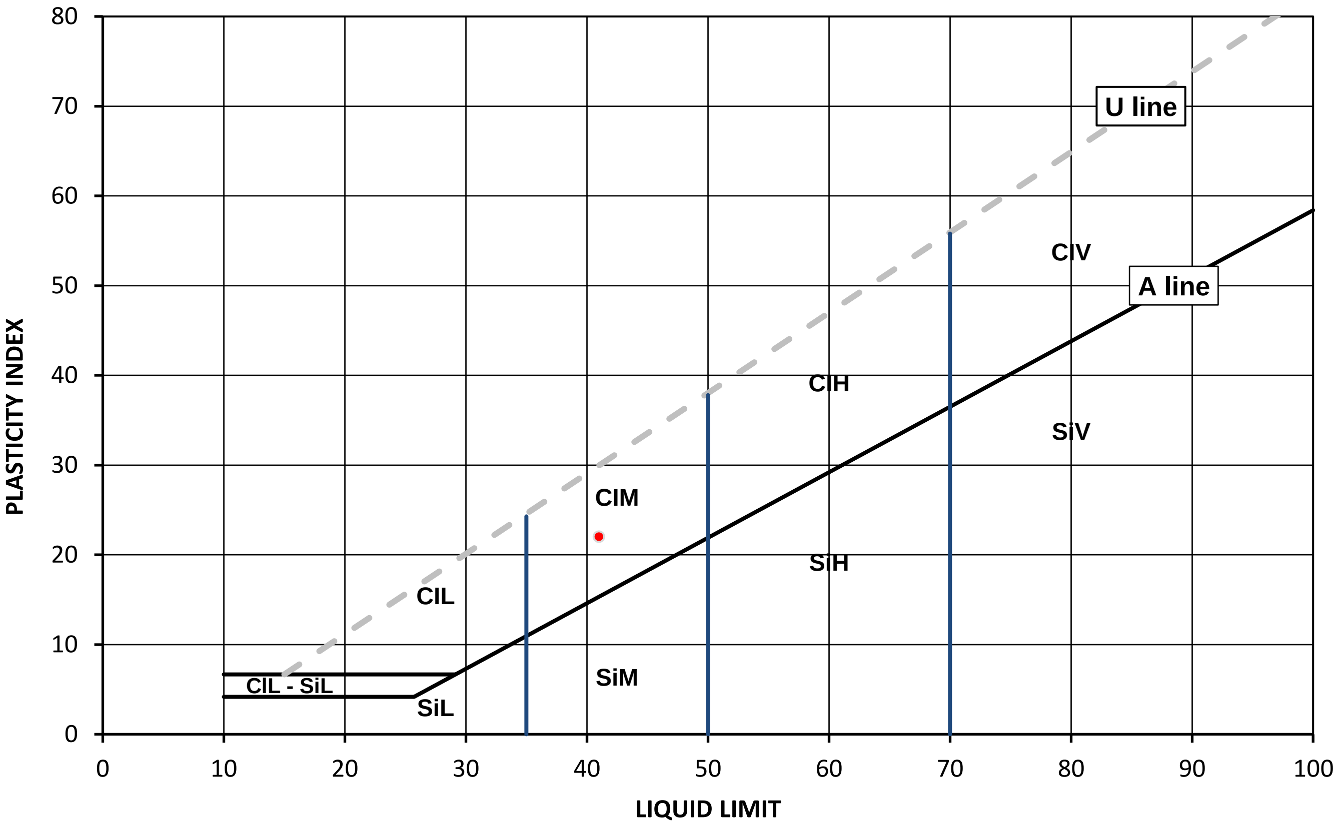
Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	21/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

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

Test Results:

Laboratory Reference:	2006877	Depth Top [m]:	2.00
Hole No.:	BH108	Depth Base [m]:	2.45
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	41	19	22	95



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 20/09/2021
Sampled By: i2 - R.S

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

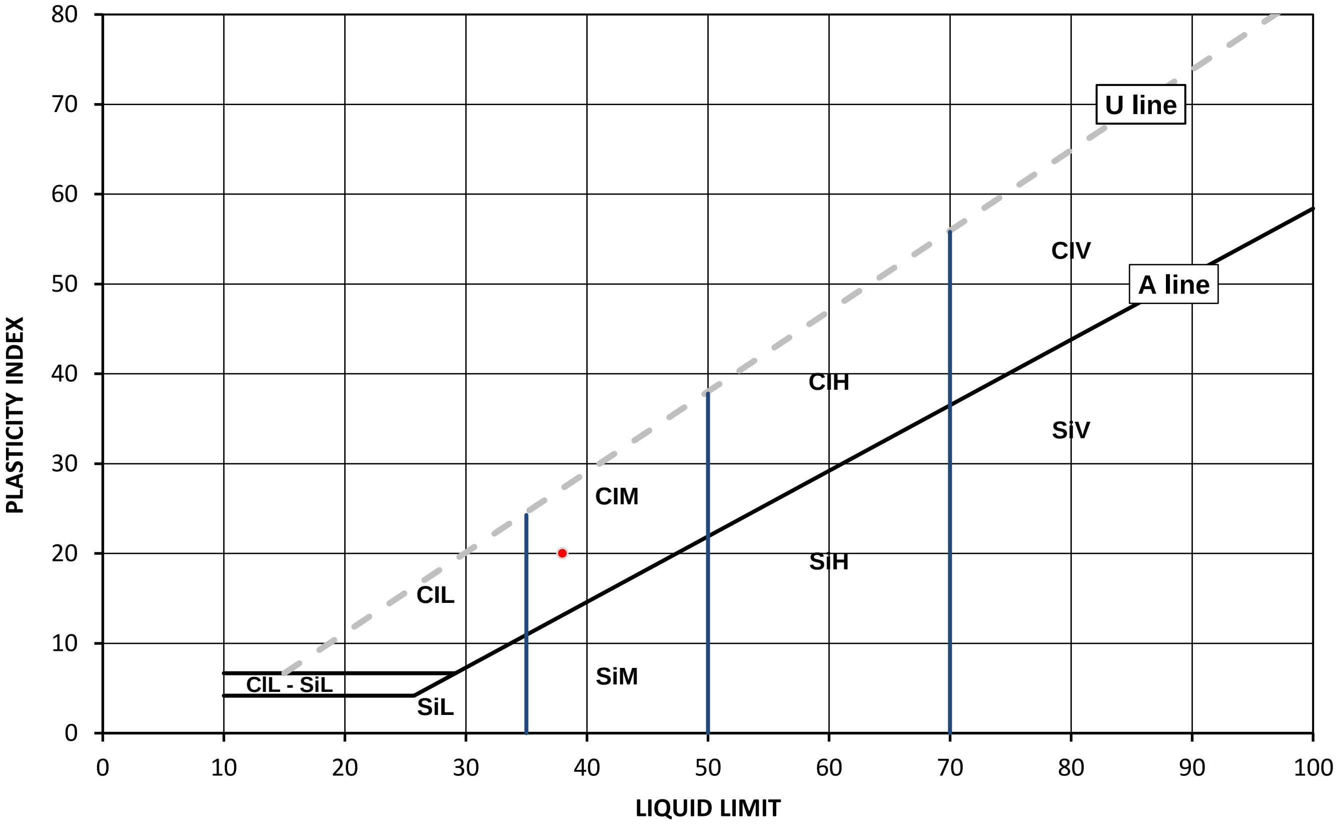
Test Results:

Laboratory Reference: 2011183
Hole No.: BH109
Sample Reference: Not Given
Sample Description: Greyish brown slightly gravelly sandy CLAY

Depth Top [m]: 2.00
Depth Base [m]: 2.45
Sample Type: U

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	38	18	20	96



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

				Plasticity	Liquid Limit
Cl	Clay				
Si	Silt	L	Low		below 35
		M	Medium		35 to 50
		H	High		50 to 70
		V	Very high		exceeding 70
		O	Organic		append to classification for organic material (eg ClHO)

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

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

Environmental Science

Client:	Hydrock Consultants Ltd
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY
Contact:	Russell Sumner
Site Address:	Garth Wymott 2

Client Reference:	C-19851-C
Job Number:	21-98690
Date Sampled:	Not Given
Date Received:	13/09/2021
Date Tested:	21/09/2021
Sampled By:	i2 - R.S

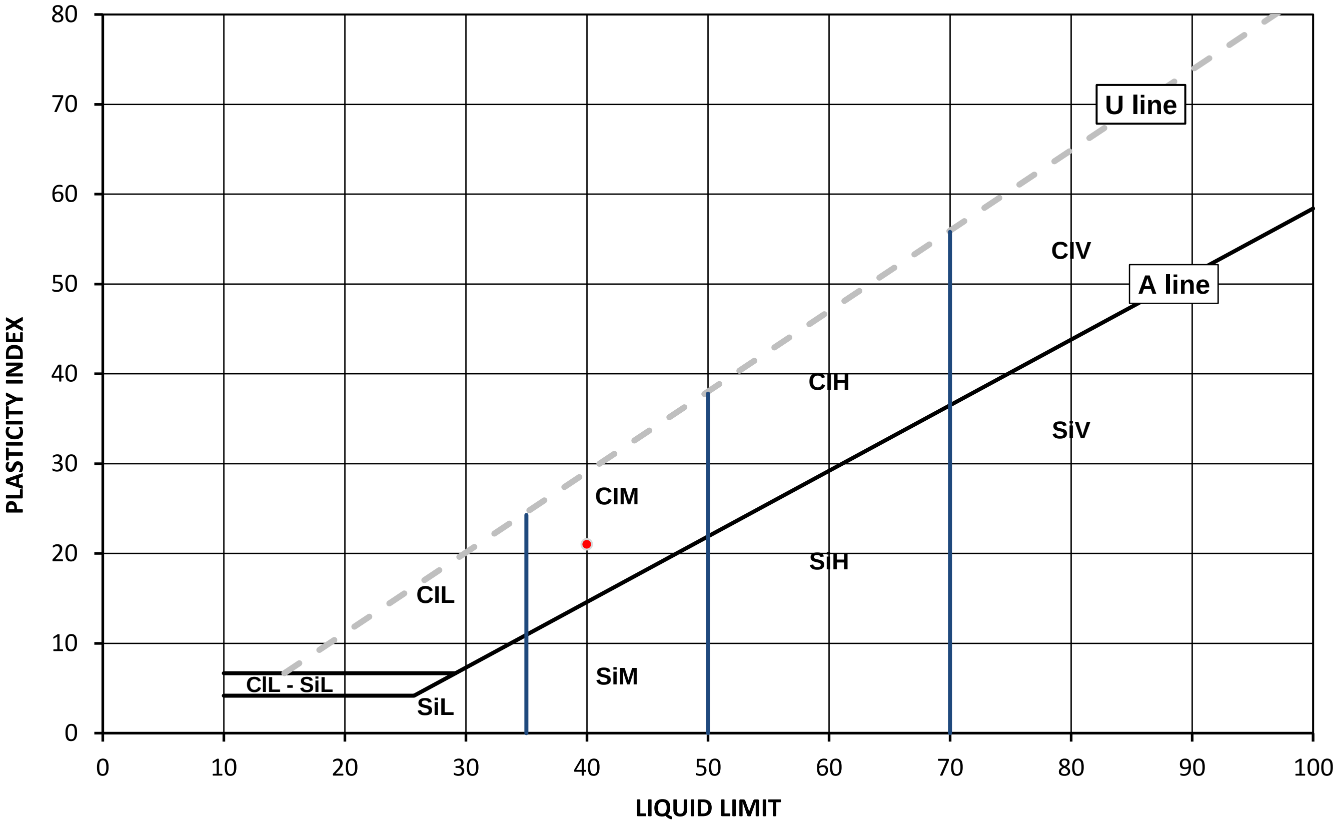
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2011185
Hole No.:	BH109
Sample Reference:	Not Given
Sample Description:	Brown slightly gravelly sandy CLAY
Sample Preparation:	Tested after >425um removed by hand

Depth Top [m]:	1.20
Depth Base [m]:	1.65
Sample Type:	U

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	40	19	21	97



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

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

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

Moisture Content by BS 1377-2: 1990: Clause 3.2; Water Content by BS EN 17892-1: 2014; Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2: 1990: Clause 8.2

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

Client: Hydrock Consultants Ltd

Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY

Contact: Russell Sumner

Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 17/09-21/09/2021
Sampled By: i2 - R.S

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Moisture Content [W]	Water Content [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top m	Depth Base m	Type			%	%	% Passing 425um %	WL %	Wp %	Ip %	bulk Mg/m3	dry Mg/m3	PD Mg/m3	%		
2006888	BH103	Not Given	1.20	1.20	B	Greyish brown CLAY		21											
2006887	BH104	Not Given	0.80	0.80	B	Greyish brown CLAY		23											
2006876	BH105	Not Given	1.20	1.65	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	19		96	42	19	23						
2006868	BH106	Not Given	1.20	1.65	D	Greyish brown sandy CLAY	Atterberg 4 Point	18		100	37	18	19						
2006875	BH106	Not Given	2.00	2.45	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	20		99	42	17	25						
2006865	BH107A	Not Given	6.50	6.95	U	Brown slightly gravelly very sandy CLAY	Atterberg 4 Point	17		99	31	14	17						
2006877	BH108	Not Given	2.00	2.45	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	19		95	41	19	22						
2006859	BH108	Not Given	4.00	4.45	U	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	20		98	38	18	20						
2011185	BH109	Not Given	1.20	1.65	U	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	18		97	40	19	21						
2011183	BH109	Not Given	2.00	2.45	U	Greyish brown slightly gravelly sandy CLAY	Atterberg 4 Point	18		96	38	18	20						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS TESTING
4041

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

Moisture Content by BS 1377-2: 1990: Clause 3.2; Water Content by BS EN 17892-1: 2014; Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2: 1990: Clause 8.2

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

Analytical i2
Environmental Science

Client: Hydrock Consultants Ltd

Client Address:
4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY

Contact: Russell Sumner

Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 17/09-21/09/2021
Sampled By: i2 - R.S

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Moisture Content [W]	Water Content [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top m	Depth Base m	Type			%	%	% Passing 425um %	WL %	Wp %	Ip %	bulk Mg/m3	dry Mg/m3	PD Mg/m3	%		
2006884	CB4106	1	0.47	0.47	D	Dark brown mottled yellowish brown slightly silty CLAY		24											
2006886	WS102	2	0.20	0.50	B	Greyish brown CLAY		20											
2006869	WS102	4	2.00	2.45	D	Dark grey slightly gravelly organic CLAY	Atterberg 4 Point	115		98	107	58	49						
2006870	WS102	7	3.00	3.45	D	Brown mottled dark grey slightly gravelly sandy CLAY with fragments of wood	Atterberg 4 Point	20		99	39	17	22						
2006885	WS103	Not Given	0.30	0.70	B	Brown CLAY		16											
2006874	WS103	Not Given	1.20	1.65	D	Brown mottled grey slightly gravelly slightly sandy CLAY	Atterberg 4 Point	19		99	50	20	30						
2006871	WS105	3	1.20	1.65	D	Brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	20		98	45	18	27						
2006872	WS105	5	2.00	2.45	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	18		99	42	20	22						
2006873	WS106	4	2.00	2.45	D	Brown sandy CLAY	Atterberg 4 Point	17		100	41	17	24						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

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

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 21/09/2021
Sampled By: i2 - R.S

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

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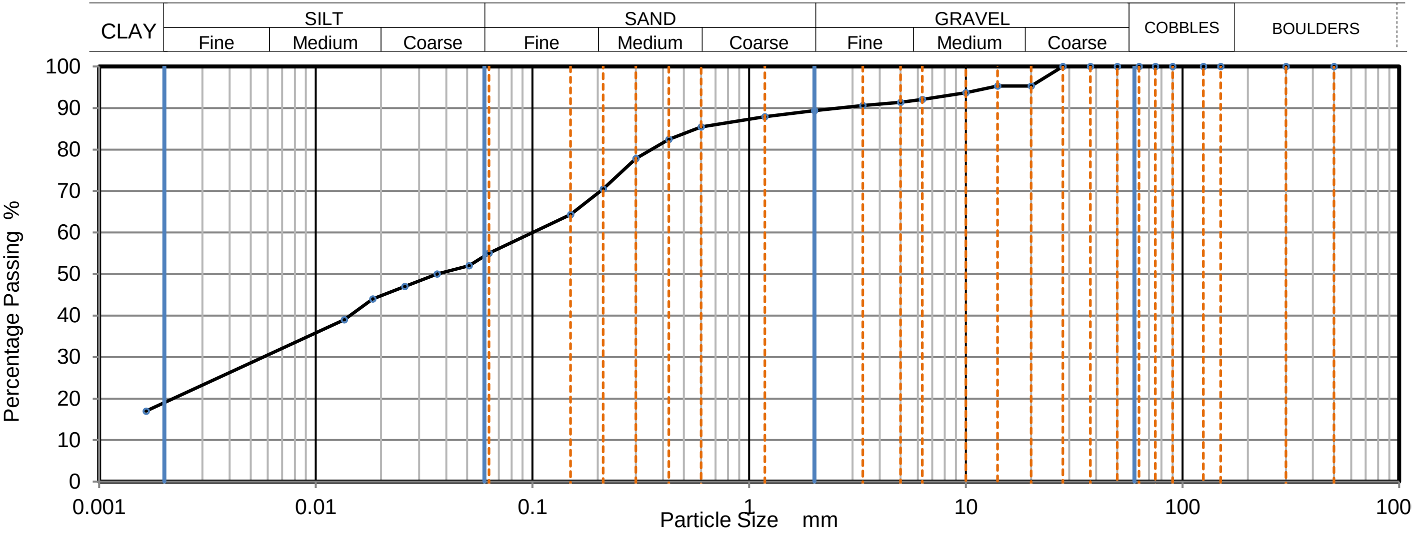
Test Results:

Laboratory Reference: 2006878
Hole No.: BH107a
Sample Reference: Not Given
Sample Description: Brown gravelly clayey very sandy SILT
Sample Preparation: Sample was quartered, oven dried at 106.3 °C and broken down by hand.

Depth Top [m]: 8.00
Depth Base [m]: 8.45
Sample Type: B



Sieving	
Particle Size mm	% Passing
500	100
300	100
150	100
125	100
90	100
75	100
63	100
50	100
37.5	100
28	100
20	95
14	95
10	94
6.3	92
5	91
3.35	91
2	89
1.18	88
0.6	85
0.425	82
0.3	78
0.212	71
0.15	64
0.063	55

Sedimentation	
Particle Size mm	% Passing
0.0630	55
0.0509	52
0.0362	50
0.0258	47
0.0183	44
0.0135	39
0.0016	17
Particle density	(assumed)
2.65	Mg/m3

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	34
Silt	36
Clay	19

Grading Analysis		
D100	mm	28
D60	mm	0.0998
D30	mm	0.00594
D10	mm	
Uniformity Coefficient		> 61
Curvature Coefficient		

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

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

4041

TEST CERTIFICATE

Particle Size Distribution

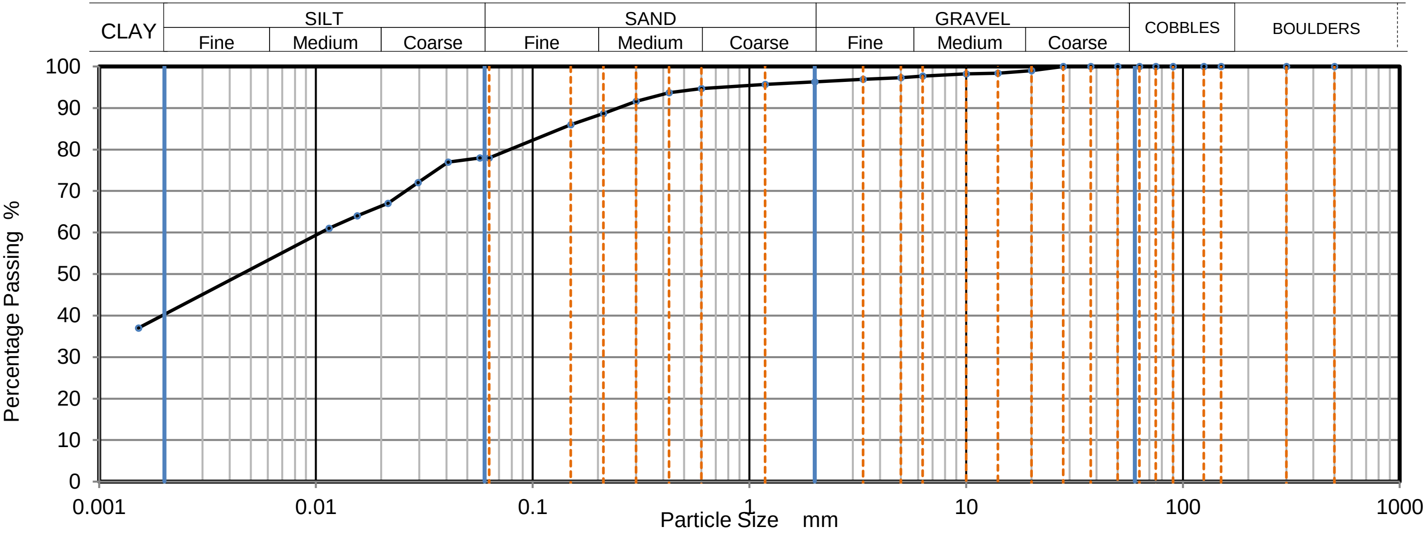
Tested in Accordance with: BS 1377-2: 1990

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	20/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

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

Test Results:

Laboratory Reference:	2006879	Depth Top [m]:	1.20
Hole No.:	SA104	Depth Base [m]:	1.60
Sample Reference:	5	Sample Type:	B
Sample Description:	Brown slightly gravelly sandy very silty CLAY		
Sample Preparation:	Sample was quartered, oven dried at 106.9 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0570	78
300	100	0.0407	77
150	100	0.0296	72
125	100	0.0215	67
90	100	0.0155	64
75	100	0.0115	61
63	100	0.0015	37
50	100		
37.5	100		
28	100		
20	99		
14	98		
10	98		
6.3	98		
5	97		
3.35	97	Particle density	(assumed)
2	96	2.65	Mg/m3
1.18	96		
0.6	95		
0.425	94		
0.3	92		
0.212	89		
0.15	86		
0.063	78		

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	18
Silt	38
Clay	40

Grading Analysis		
D100	mm	28
D60	mm	0.0107
D30	mm	
D10	mm	
Uniformity Coefficient		> 7.1
Curvature Coefficient		

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

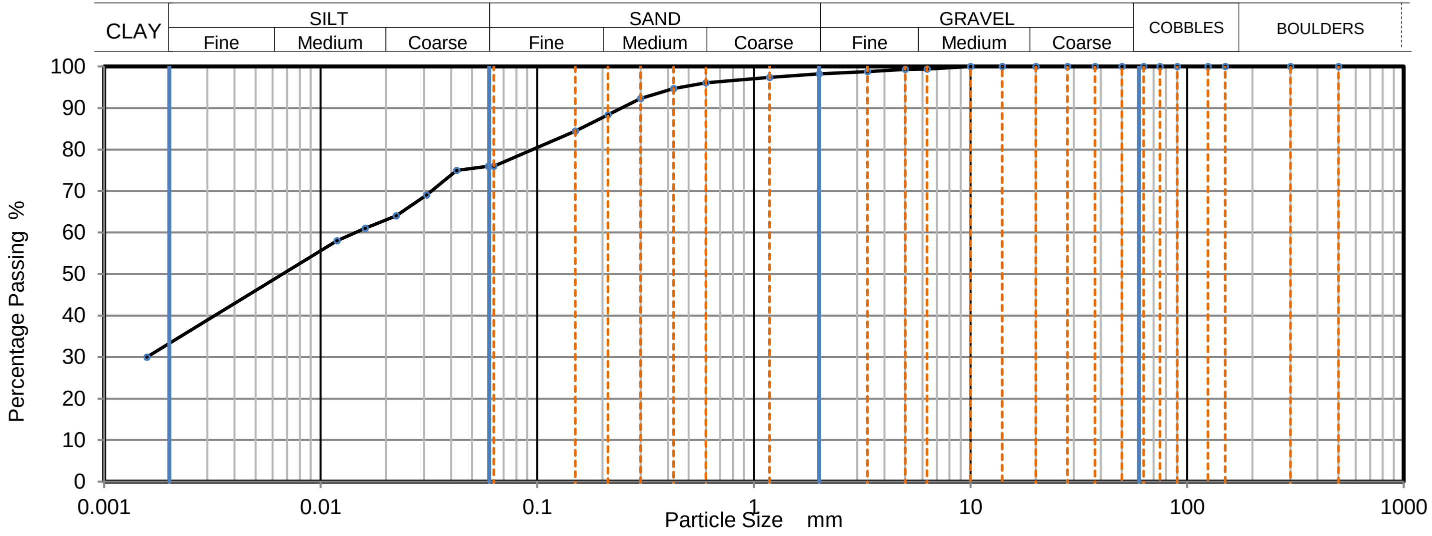
Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 20/09/2021
Sampled By: i2 - R.S

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

Test Results:

Laboratory Reference: 2006880
Hole No.: BH102
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy very clayey SILT
Sample Preparation: Sample was quartered, oven dried at 106.8 °C and broken down by hand.

Depth Top [m]: 5.00
Depth Base [m]: 5.50
Sample Type: B



Sieving	
Particle Size mm	% Passing
500	100
300	100
150	100
125	100
90	100
75	100
63	100
50	100
37.5	100
28	100
20	100
14	100
10	100
6.3	99
5	99
3.35	99
2	98
1.18	97
0.6	96
0.425	95
0.3	92
0.212	88
0.15	84
0.063	76

Sedimentation	
Particle Size mm	% Passing
0.0594	76
0.0424	75
0.0308	69
0.0223	64
0.0160	61
0.0119	58
0.0016	30

Particle density (assumed)
2.65 Mg/m3

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	22
Silt	42
Clay	34

Grading Analysis		
D100	mm	10
D60	mm	0.0147
D30	mm	
D10	mm	
Uniformity Coefficient		> 9.3
Curvature Coefficient		

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

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

Client:	Hydrock Consultants Ltd
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY
Contact:	Russell Sumner
Site Address:	Garth Wymott 2

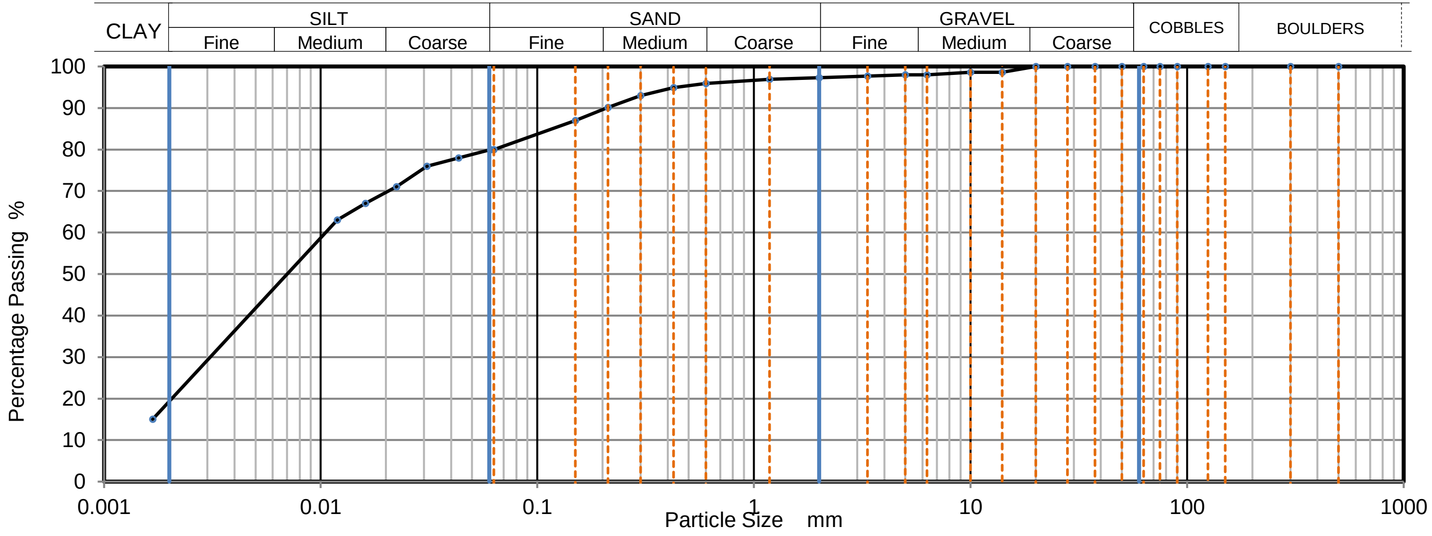
Client Reference:	C-19851-C
Job Number:	21-98690
Date Sampled:	Not Given
Date Received:	13/09/2021
Date Tested:	21/09/2021
Sampled By:	i2 - R.S

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

Test Results:

Laboratory Reference:	2006881
Hole No.:	SA106
Sample Reference:	4
Sample Description:	Brown slightly gravelly sandy clayey SILT
Sample Preparation:	Sample was quartered, oven dried at 106.9 °C and broken down by hand.

Depth Top [m]:	1.20
Depth Base [m]:	1.50
Sample Type:	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0607	80
300	100	0.0433	78
150	100	0.0309	76
125	100	0.0224	71
90	100	0.0161	67
75	100	0.0119	63
63	100	0.0017	15
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	98		
5	98		
3.35	98	Particle density	(assumed)
2	97	2.65	Mg/m3
1.18	97		
0.6	96		
0.425	95		
0.3	93		
0.212	90		
0.15	87		
0.063	80		

Sample Proportions	% dry mass
Very coarse	0
Gravel	3
Sand	17
Silt	61
Clay	19

Grading Analysis		
D100	mm	20
D60	mm	0.0104
D30	mm	0.00309
D10	mm	
Uniformity Coefficient		> 6.2
Curvature Coefficient		

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS TESTING
4041

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

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

Analytical i2
Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

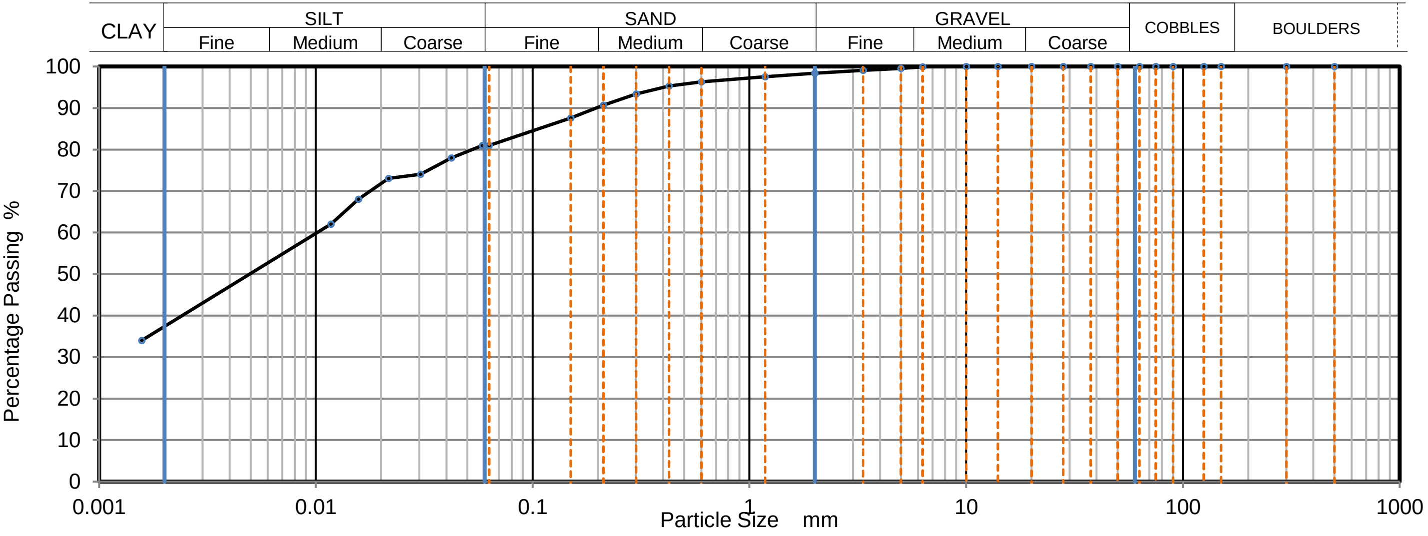
Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 20/09/2021
Sampled By: i2 - R.S

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

Test Results:

Laboratory Reference: 2006882
Hole No.: WS103
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy very clayey SILT
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 1.20
Depth Base [m]: 2.00
Sample Type: B



Sieving	
Particle Size mm	% Passing
500	100
300	100
150	100
125	100
90	100
75	100
63	100
50	100
37.5	100
28	100
20	100
14	100
10	100
6.3	100
5	100
3.35	99
2	98
1.18	98
0.6	96
0.425	95
0.3	93
0.212	91
0.15	88
0.063	81

Sedimentation	
Particle Size mm	% Passing
0.0586	81
0.0422	78
0.0304	74
0.0217	73
0.0157	68
0.0117	62
0.0016	34

Particle density (assumed)
2.65 Mg/m3

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	17
Silt	44
Clay	37

Grading Analysis	
D100 mm	10
D60 mm	0.0099
D30 mm	
D10 mm	
Uniformity Coefficient	> 6.3
Curvature Coefficient	

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

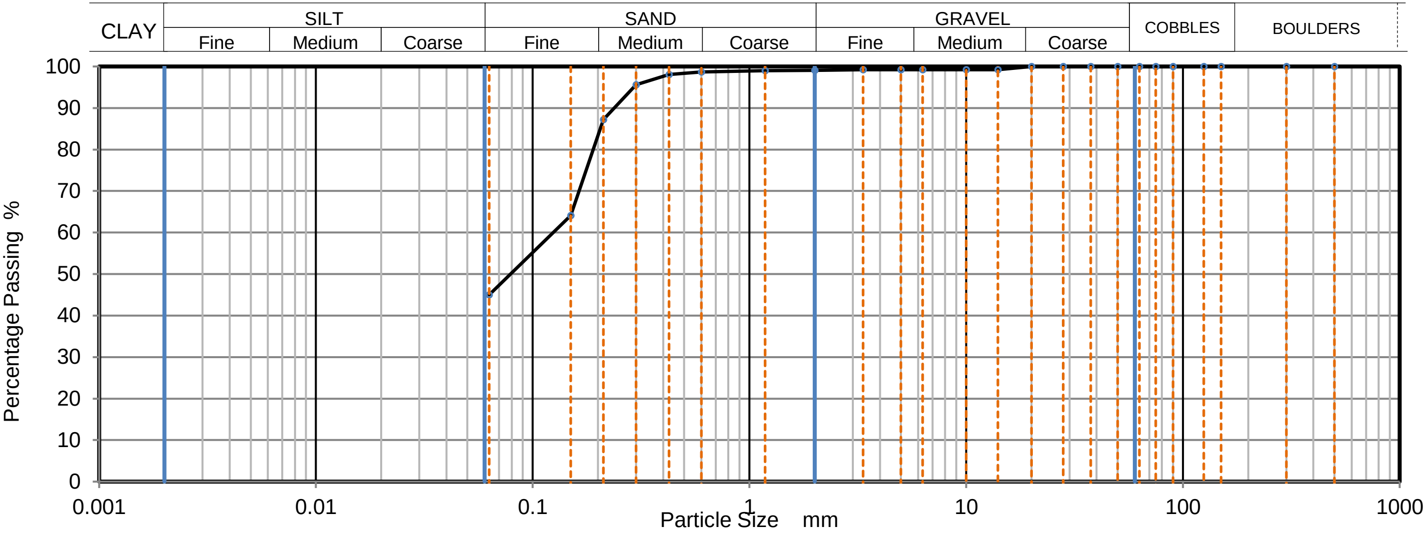
Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 20/09/2021
Sampled By: i2 - R.S

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

Test Results:

Laboratory Reference: 2006883
Hole No.: BH103
Sample Reference: Not Given
Sample Description: Brown very clayey SAND
Sample Preparation: Sample was quartered, oven dried at 106.9 °C and broken down by hand.

Depth Top [m]: 12.50
Depth Base [m]: 13.00
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	99		
5	99		
3.35	99		
2	99		
1.18	99		
0.6	99		
0.425	98		
0.3	96		
0.212	87		
0.15	64		
0.063	45		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	54
Fines <0.063mm	45

Grading Analysis	
D100 mm	20
D60 mm	0.124
D30 mm	
D10 mm	
Uniformity Coefficient	> 2
Curvature Coefficient	

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

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

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

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

Environmental Science

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

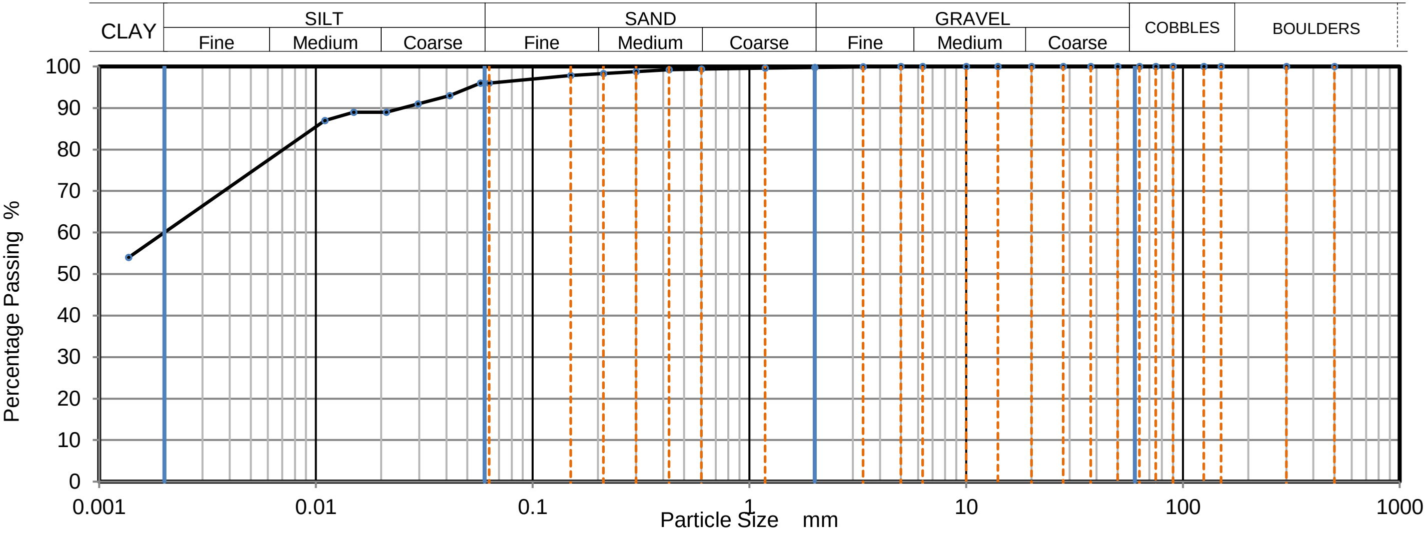
Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 20/09/2021
Sampled By: i2 - R.S

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

Test Results:

Laboratory Reference: 2011186
Hole No.: BH109
Sample Reference: Not Given
Sample Description: Brown slightly sandy very silty CLAY
Sample Preparation: Sample was quartered, oven dried at 106.9 °C and broken down by hand.

Depth Top [m]: 15.50
Depth Base [m]: 15.95
Sample Type: U



Sieving	
Particle Size mm	% Passing
500	100
300	100
150	100
125	100
90	100
75	100
63	100
50	100
37.5	100
28	100
20	100
14	100
10	100
6.3	100
5	100
3.35	100
2	100
1.18	100
0.6	99
0.425	99
0.3	99
0.212	98
0.15	98
0.063	96

Sedimentation	
Particle Size mm	% Passing
0.0575	96
0.0414	93
0.0296	91
0.0211	89
0.0149	89
0.0110	87
0.0014	54
Particle density	(assumed)
2.65	Mg/m3

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	3
Silt	37
Clay	60

Grading Analysis		
D100	mm	5
D60	mm	0.002
D30	mm	
D10	mm	
Uniformity Coefficient		> 1.5
Curvature Coefficient		

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

TEST CERTIFICATE

Determination of California Bearing Ratio

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

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

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	22/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

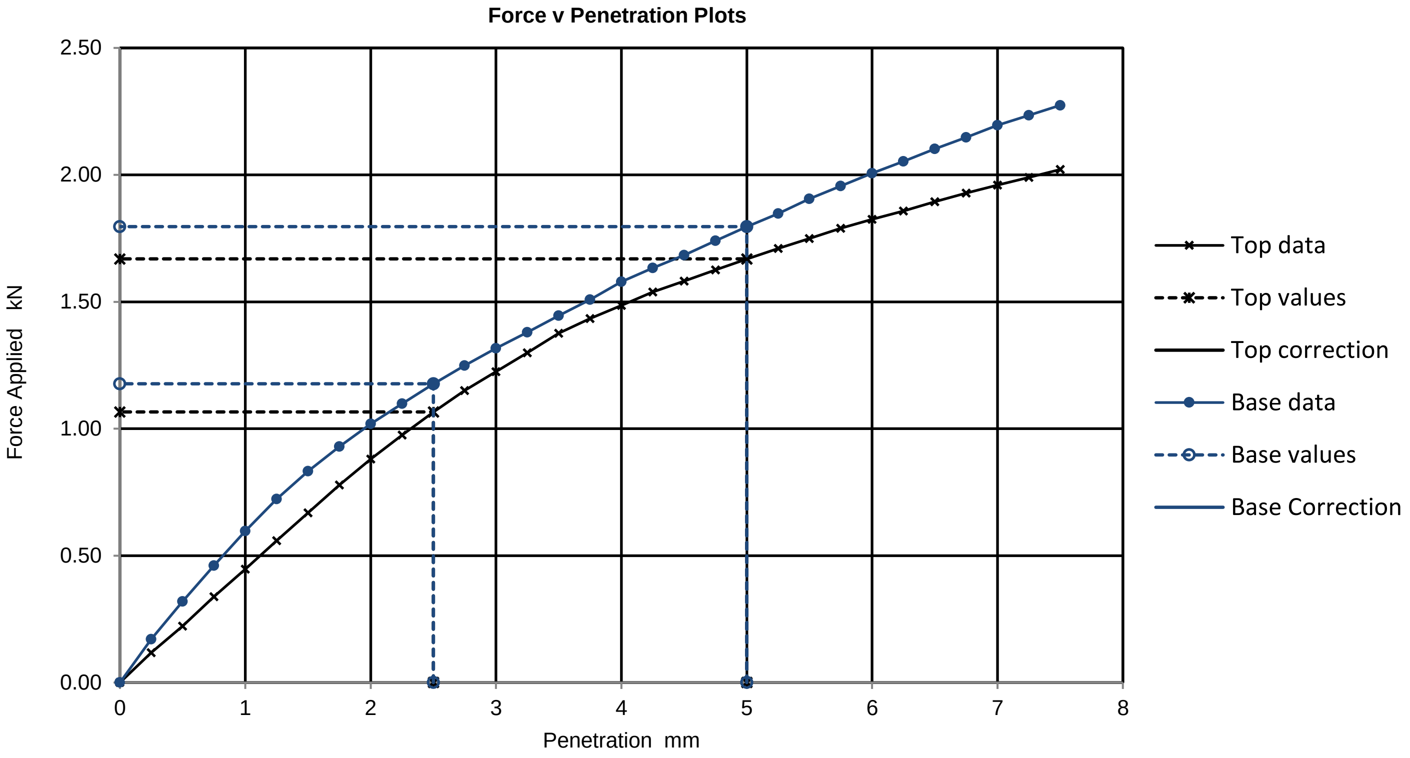
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2006885	Depth Top [m]:	0.30
Hole No.:	WS103	Depth Base [m]:	0.70
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown 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		1	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	8	kg
	Dry density	1.76	Mg/m3		4.8	kPa
	Moisture content	17	%			



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	8.1	8.3	8.3	8.7	17
BASE	No	8.9	9.0	9.0		17

Remarks:

Test/ Specimen specific remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Determination of California Bearing Ratio

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

Environmental Science

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

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 22/09/2021
Sampled By: i2 - R.S

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

Test Results:

Laboratory Reference: 2006886
Hole No.: WS102
Sample Reference: 2
Sample Description: Greyish brown CLAY

Depth Top [m]: 0.20
Depth Base [m]: 0.50
Sample Type: B

Specimen Preparation:

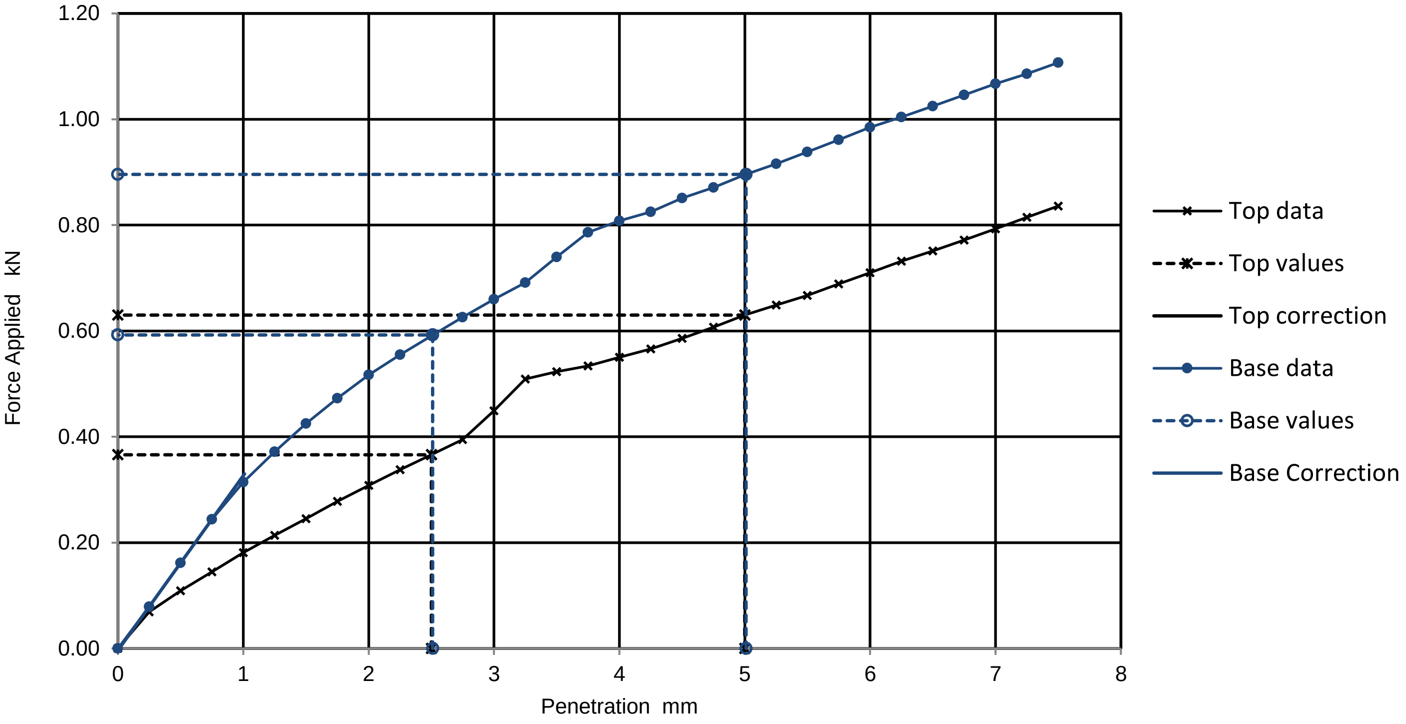
Condition: Remoulded
Details: Recompacted with specified standard effort using 2.5kg rammer

Material retained on 20mm sieve removed: 0 %

Initial Specimen details	Bulk density	1.98	Mg/m3
	Dry density	1.65	Mg/m3
	Moisture content	20	%

Soaking details	Not soaked	
Period of soaking		days
Time to surface		days
Amount of swell recorded		mm
Dry density after soaking		Mg/m3
Surcharge applied	8	kg
	4.9	kPa

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.8	3.2	3.2		20
BASE	Yes	4.5	4.5	4.5		20

Remarks:

Test/ Specimen specific remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

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TEST CERTIFICATE

Determination of California Bearing Ratio

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

Environmental Science

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

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 22/09/2021
Sampled By: i2 - R.S

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

Test Results:

Laboratory Reference: 2006887
Hole No.: BH104
Sample Reference: Not Given
Sample Description: Greyish brown CLAY

Depth Top [m]: 0.80
Depth Base [m]: 0.80
Sample Type: B

Specimen Preparation:

Condition: Remoulded
Details: Recompacted with specified standard effort using 2.5kg rammer

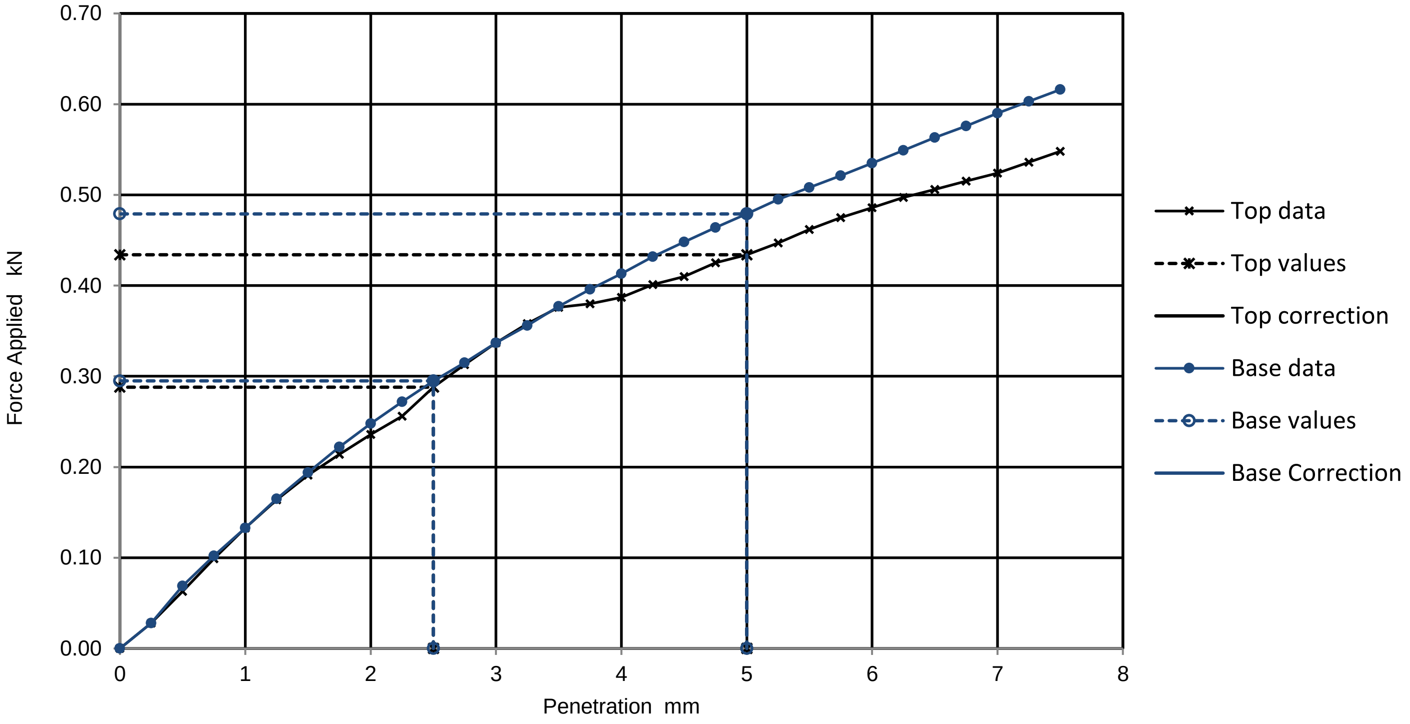
Material retained on 20mm sieve removed: 3 %

Initial Specimen details:
Bulk density 2.01 Mg/m3
Dry density 1.64 Mg/m3
Moisture content 23 %

Soaking details: Not soaked
Period of soaking: days
Time to surface: days
Amount of swell recorded: mm
Dry density after soaking: Mg/m3

Surcharge applied: 8 kg
4.9 kPa

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.2	2.2	2.2	2.3	22
BASE	No	2.2	2.4	2.4		22

Remarks:

Test/ Specimen specific remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

TEST CERTIFICATE

Determination of California Bearing Ratio

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:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	22/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

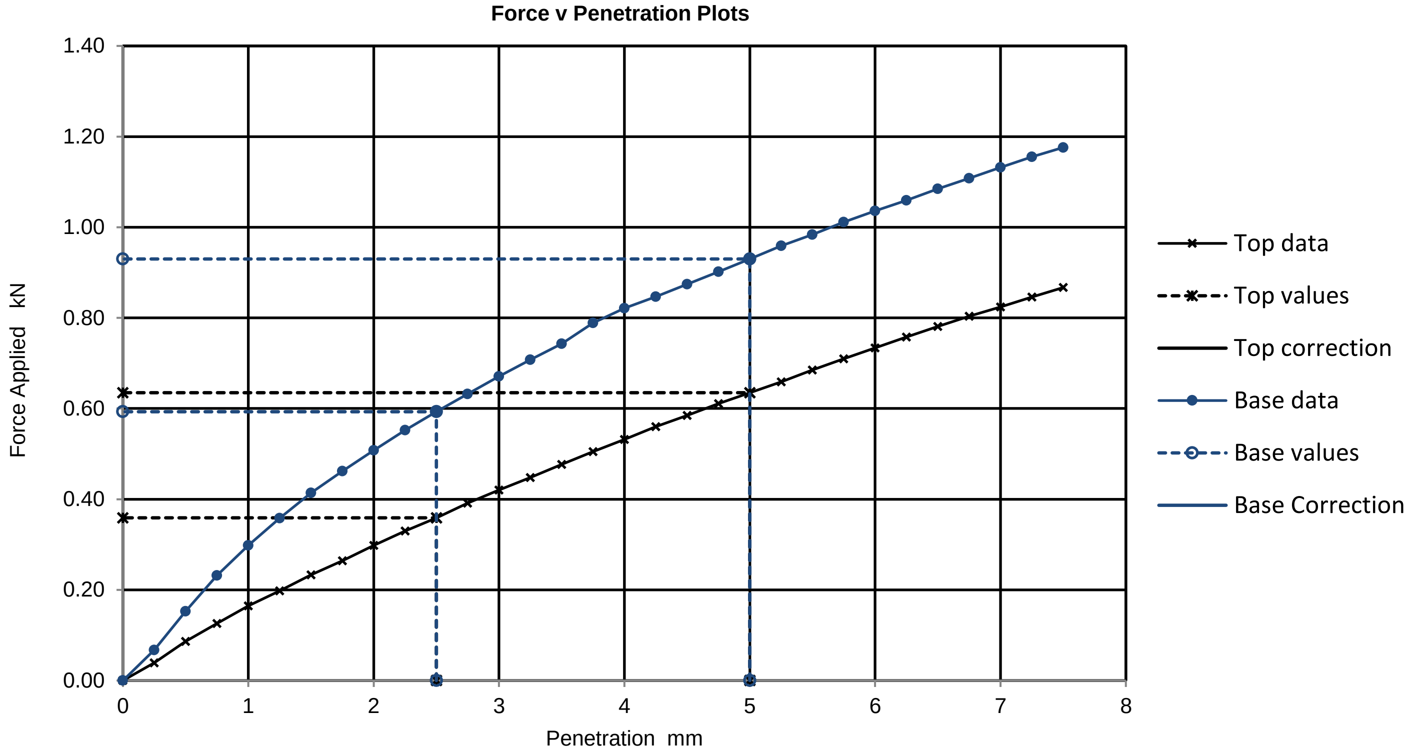
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2006888	Depth Top [m]:	1.20
Hole No.:	BH103	Depth Base [m]:	1.20
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Greyish brown 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	2.06	Mg/m3	Surcharge applied	8	kg
	Dry density	1.71	Mg/m3		4.8	kPa
	Moisture content	20	%			



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.7	3.2	3.2		19
BASE	No	4.5	4.7	4.7		20

Remarks:

Test/ Specimen specific remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE
Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 16/09/2021
Sampled By: i2 - R.S

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

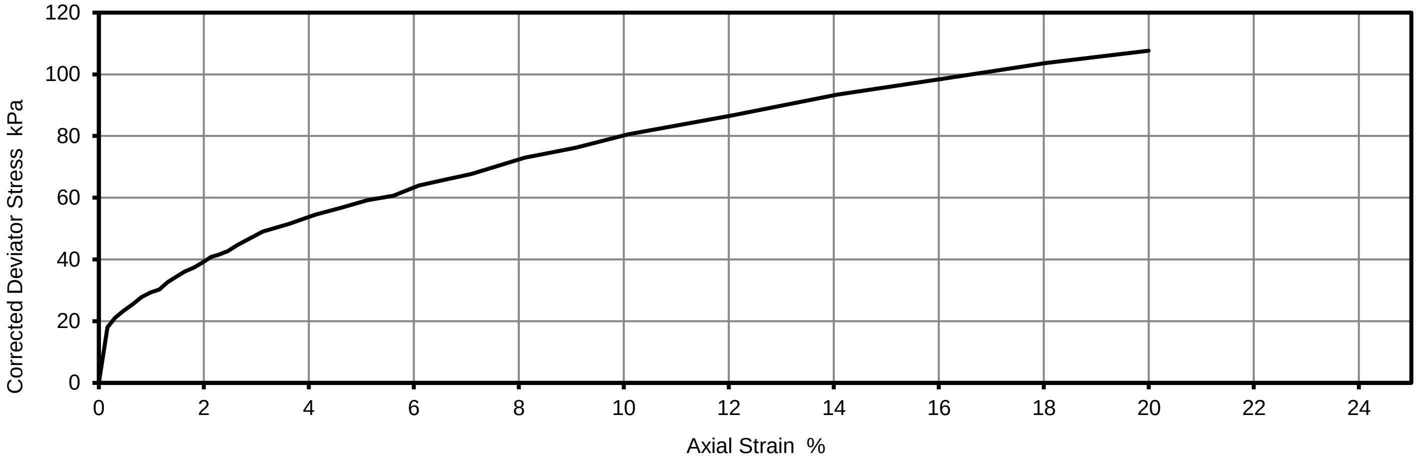
Test Results:

Laboratory Reference: 2006855
Hole No.: BH104
Sample Reference: Not Given
Sample Description: Greyish brown CLAY

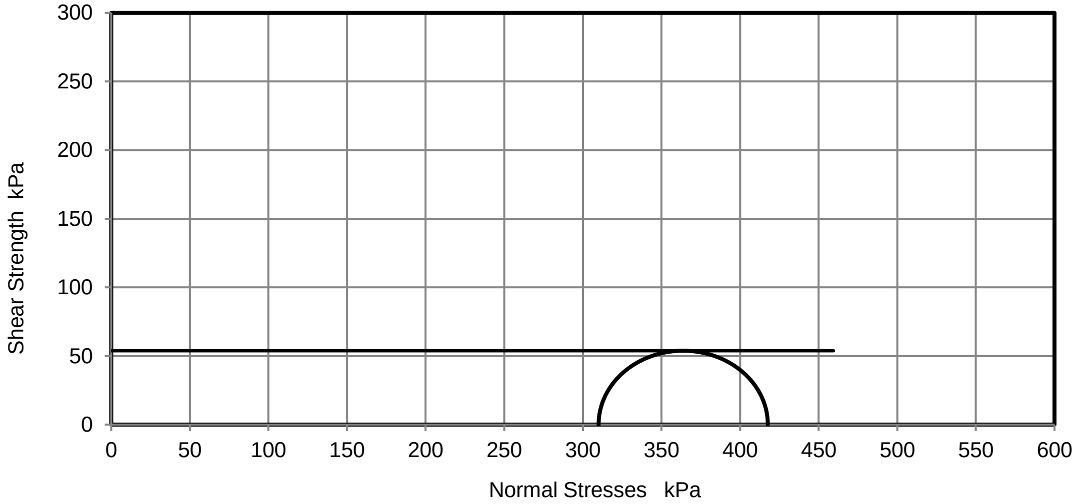
Depth Top [m]: 15.50
Depth Base [m]: 15.95
Sample Type: U

Test Number	1		Rate of Strain	2.00	%/min	
Length	140.53	mm	Cell Pressure	310	kPa	
Diameter	69.30	mm	Axial Strain at failure	20.0	%	
Bulk Density	1.99	Mg/m3	Deviator Stress, (σ1 - σ3)f	108	kPa	
Moisture Content	29	%	Undrained Shear Strength, cu	54	kPa	½(σ1 - σ3)f
Dry Density	1.53	Mg/m3	Mode of Failure	Plastic		
Membrane Correction	1.17	kPa	Membrane thickness	0.21	mm	

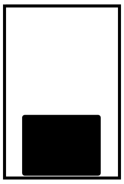
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	16/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

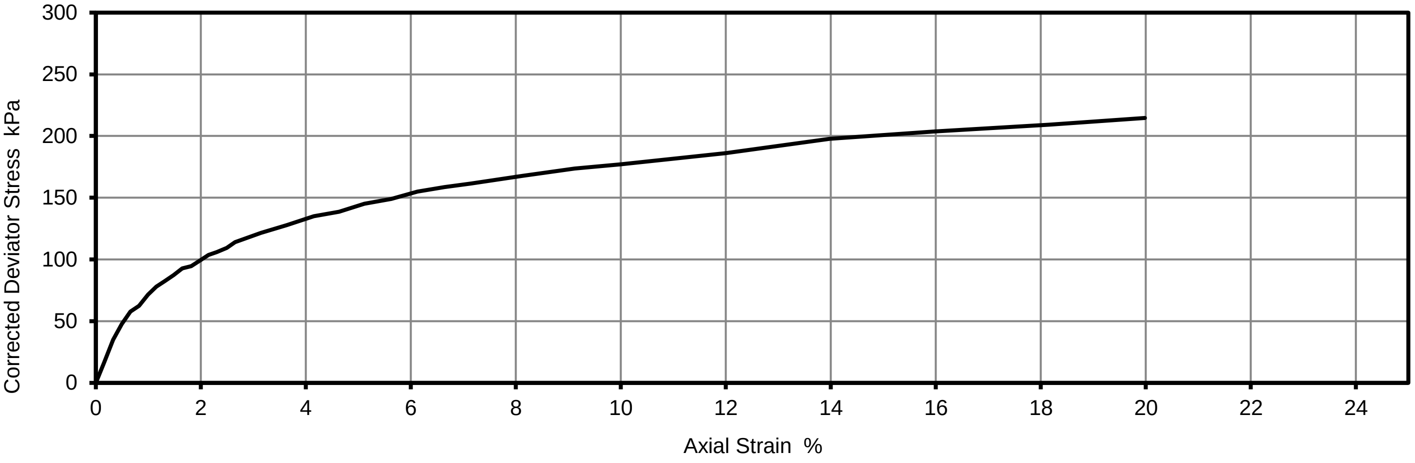
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

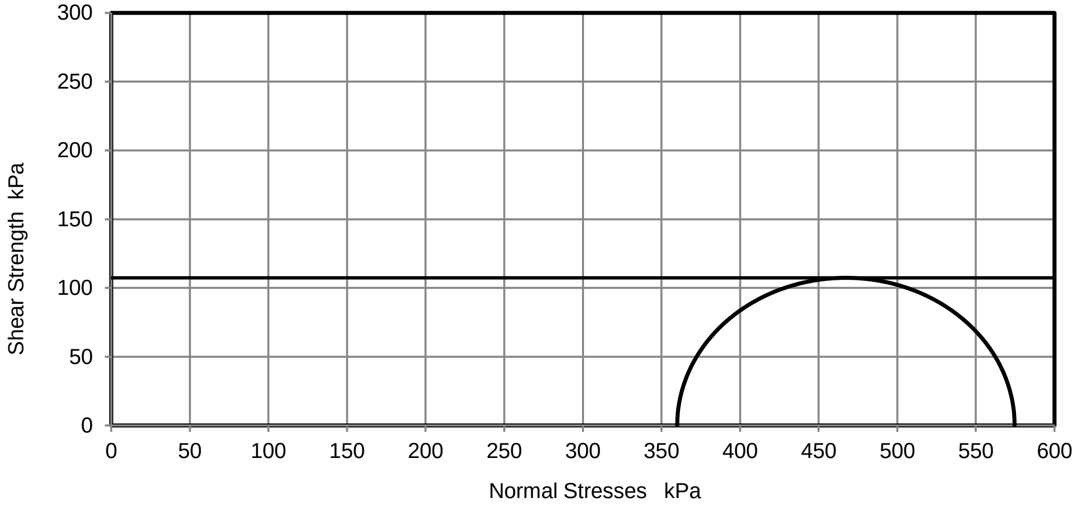
Laboratory Reference:	2006856	Depth Top [m]:	18.50
Hole No.:	BH104	Depth Base [m]:	18.95
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Greyish brown slightly sandy gravelly CLAY		

Test Number	1		Rate of Strain	2.00	%/min	
Length	100.74	mm	Cell Pressure	360	kPa	
Diameter	49.67	mm	Axial Strain at failure	20.0	%	
Bulk Density	2.24	Mg/m3	Deviator Stress, (σ1 - σ3)f	215	kPa	
Moisture Content	13	%	Undrained Shear Strength, cu	107	kPa	½(σ1 - σ3)f
Dry Density	1.98	Mg/m3	Mode of Failure	Plastic		
Membrane Correction	2.17	kPa	Membrane thickness	0.28	mm	

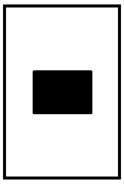
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 17/09/2021
Sampled By: i2 - R.S

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

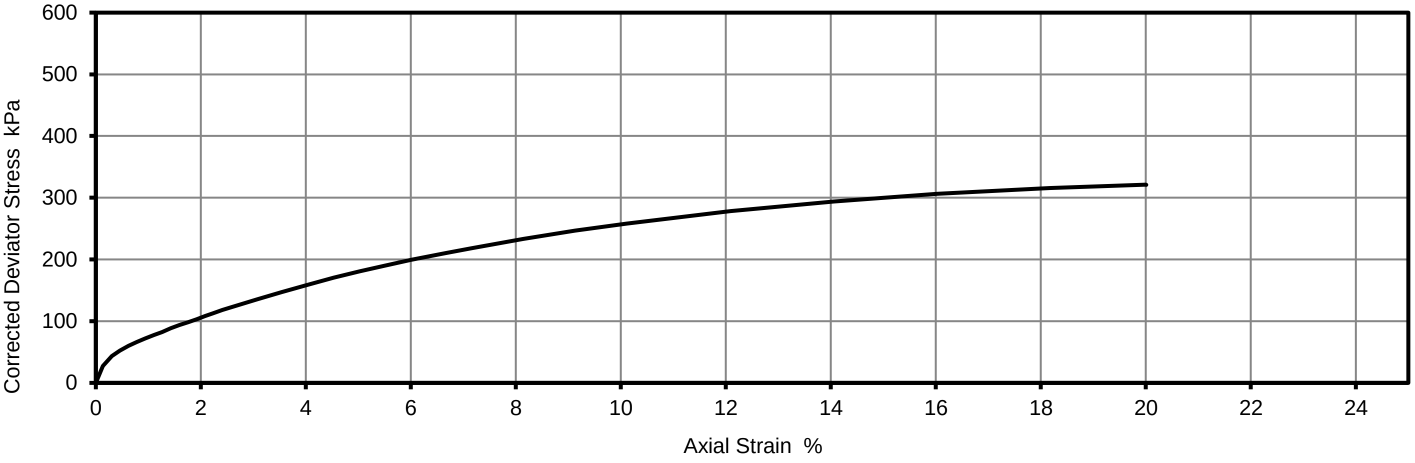
Test Results:

Laboratory Reference: 2006857
Hole No.: BH102
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY

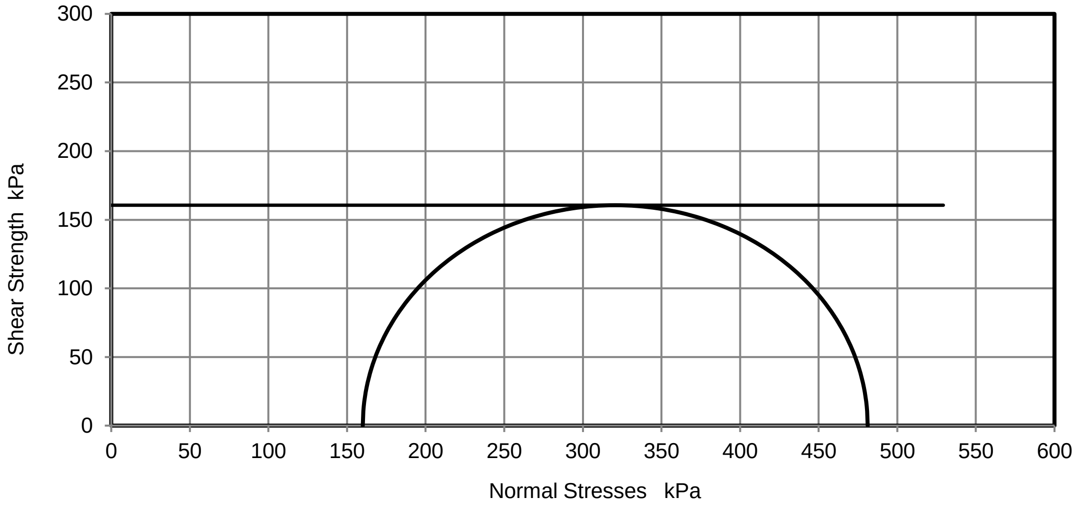
Depth Top [m]: 8.00
Depth Base [m]: 8.45
Sample Type: U

Test Number	1		Rate of Strain	1.98	%/min	
Length	202.32	mm	Cell Pressure	160	kPa	
Diameter	101.21	mm	Axial Strain at failure	20.0	%	
Bulk Density	2.28	Mg/m3	Deviator Stress, (σ1 - σ3)f	321	kPa	
Moisture Content	14	%	Undrained Shear Strength, cu	161	kPa	½(σ1 - σ3)f
Dry Density	2.00	Mg/m3	Mode of Failure	Plastic		
Membrane Correction	0.84	kPa	Membrane thickness	0.22	mm	

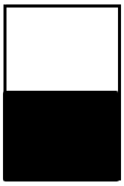
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client:	Hydrock Consultants Ltd
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY
Contact:	Russell Sumner
Site Address:	Garth Wymott 2

Client Reference:	C-19851-C
Job Number:	21-98690
Date Sampled:	Not Given
Date Received:	13/09/2021
Date Tested:	17/09/2021
Sampled By:	i2 - R.S

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

Test Results:

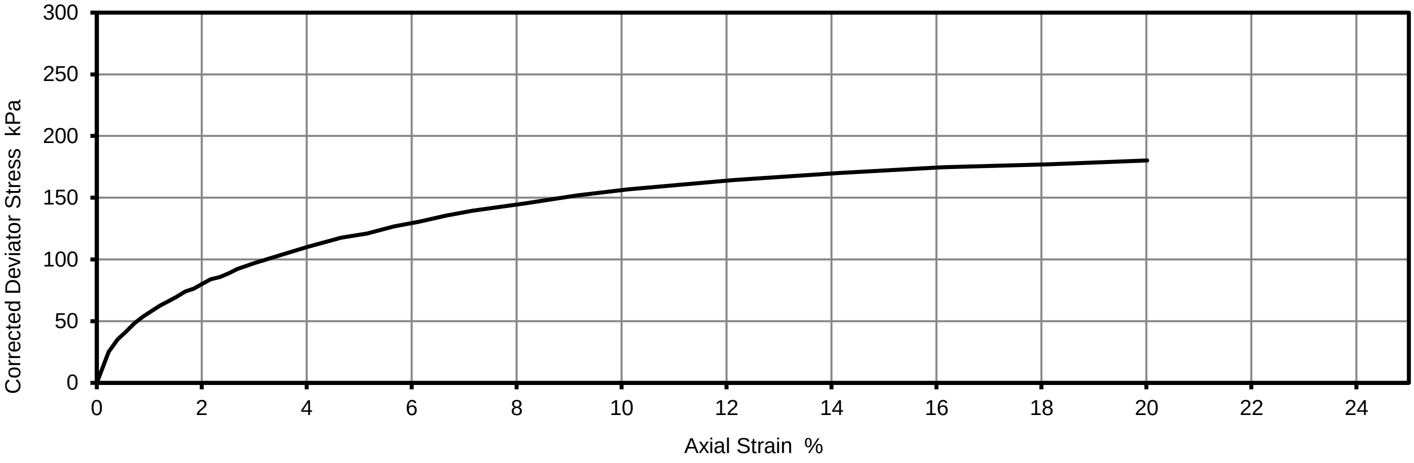
Laboratory Reference:	2006858
Hole No.:	BH102
Sample Reference:	Not Given
Sample Description:	Brown slightly gravelly slightly sandy CLAY

Depth Top [m]:	9.00
Depth Base [m]:	9.45
Sample Type:	U

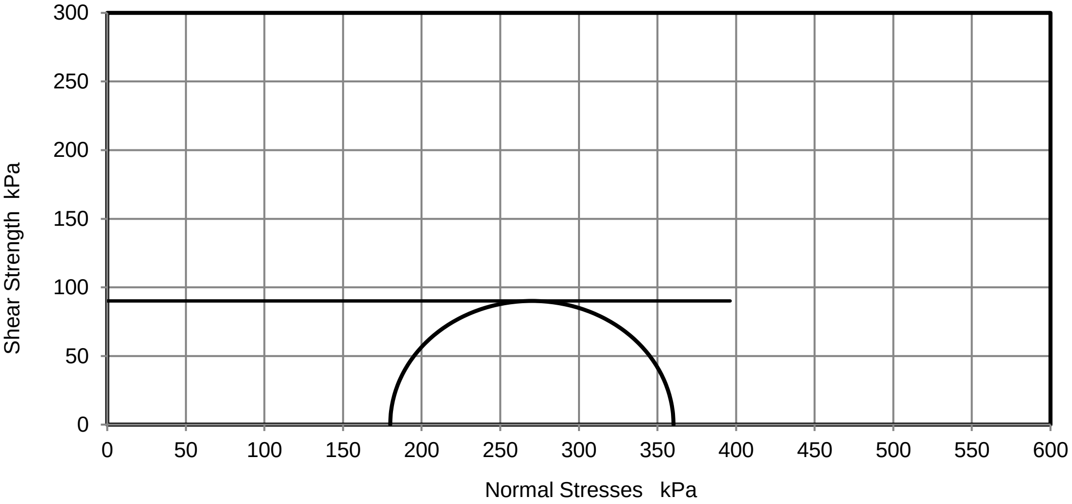
Test Number	1	
Length	139.15	mm
Diameter	69.69	mm
Bulk Density	2.23	Mg/m3
Moisture Content	15	%
Dry Density	1.93	Mg/m3
Membrane Correction	1.16	kPa

Rate of Strain	2.00	%/min	
Cell Pressure	180	kPa	
Axial Strain at failure	20.0	%	
Deviator Stress, (σ1 - σ3)f	180	kPa	
Undrained Shear Strength, cu	90	kPa	½(σ1 - σ3)f
Mode of Failure	Plastic		
Membrane thickness	0.21	mm	

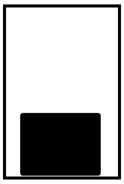
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



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Remarks:

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Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	17/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

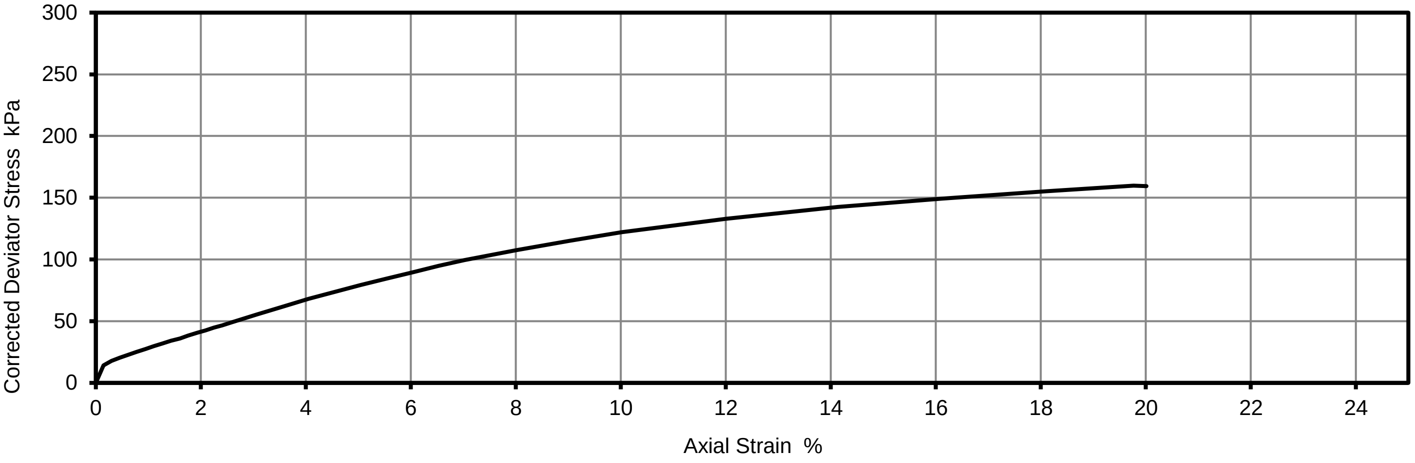
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

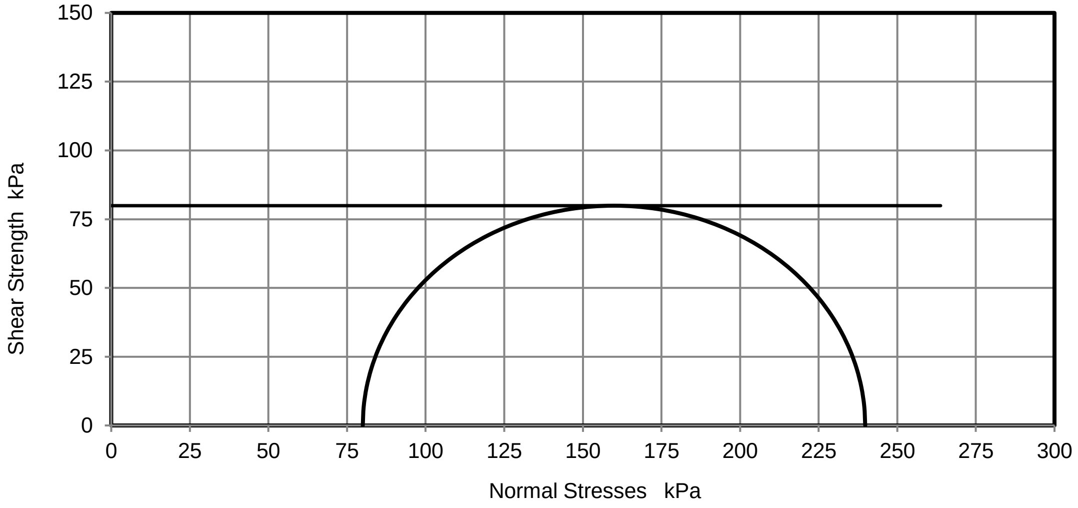
Laboratory Reference:	2006859	Depth Top [m]:	4.00
Hole No.:	BH108	Depth Base [m]:	4.45
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Brown slightly gravelly sandy CLAY		

Test Number	1		Rate of Strain	1.98	%/min	
Length	202.48	mm	Cell Pressure	80	kPa	
Diameter	98.80	mm	Axial Strain at failure	19.8	%	
Bulk Density	2.22	Mg/m3	Deviator Stress, (σ1 - σ3)f	160	kPa	
Moisture Content	20	%	Undrained Shear Strength, cu	80	kPa	½(σ1 - σ3)f
Dry Density	1.85	Mg/m3	Mode of Failure	Plastic		
Membrane Correction	0.85	kPa	Membrane thickness	0.22	mm	

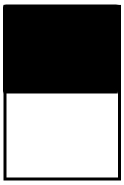
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



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Remarks:

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Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 17/09/2021
Sampled By: i2 - R.S

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

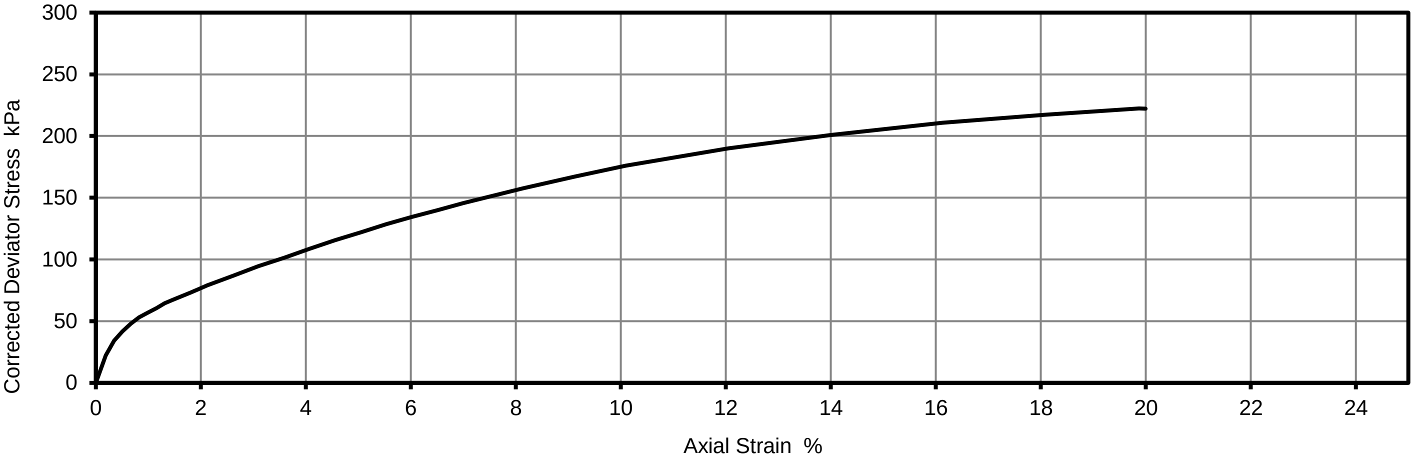
Test Results:

Laboratory Reference: 2006860
Hole No.: BH103
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY

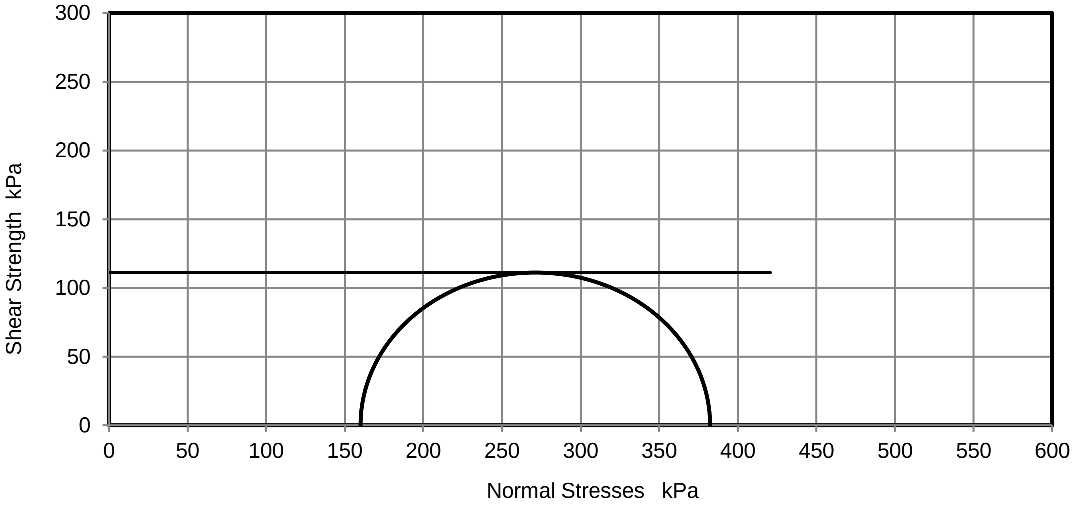
Depth Top [m]: 8.00
Depth Base [m]: 8.45
Sample Type: U

Test Number	1		Rate of Strain	1.96	%/min	
Length	204.40	mm	Cell Pressure	160	kPa	
Diameter	102.44	mm	Axial Strain at failure	19.9	%	
Bulk Density	2.23	Mg/m3	Deviator Stress, (σ1 - σ3)f	222	kPa	
Moisture Content	14	%	Undrained Shear Strength, cu	111	kPa	½(σ1 - σ3)f
Dry Density	1.95	Mg/m3	Mode of Failure	Plastic		
Membrane Correction	1.05	kPa	Membrane thickness	0.28	mm	

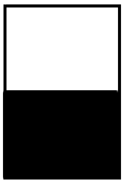
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



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Remarks:

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BS 1377-7: 1990: Clause 8

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Northampton NN4 7EB

Environmental Science

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	17/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

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

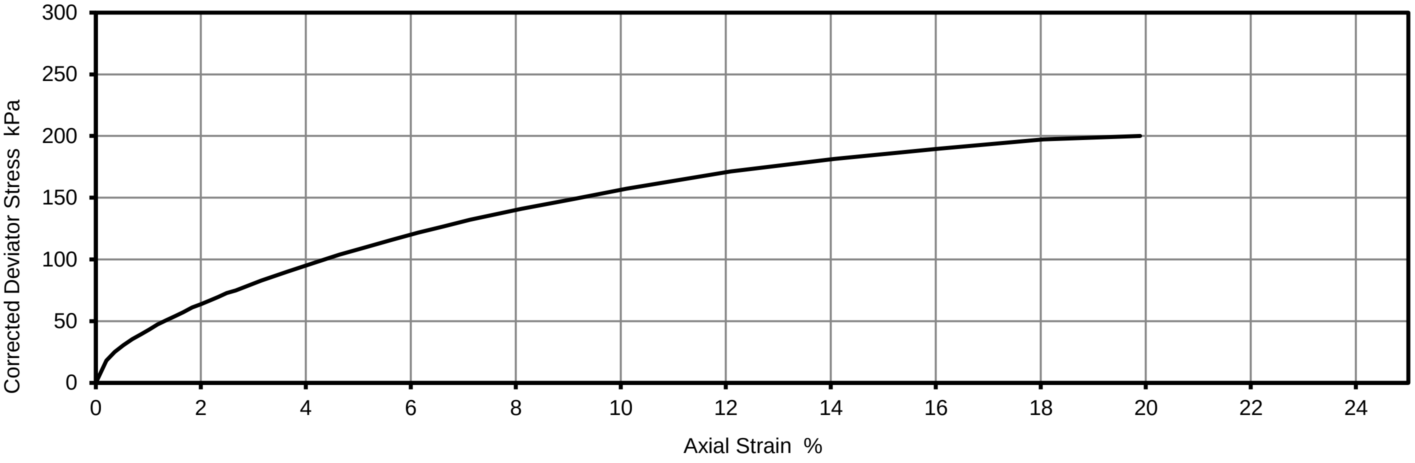
---

Test Results:

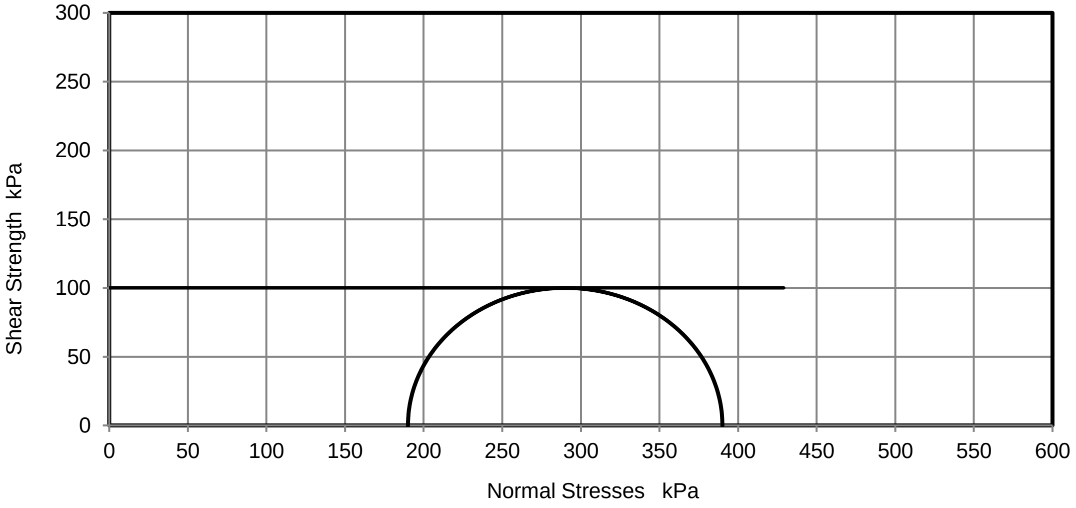
Laboratory Reference:	2006861	Depth Top [m]:	9.50
Hole No.:	BH106	Depth Base [m]:	9.95
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Brown slightly gravelly slightly sandy CLAY		

Test Number	1		Rate of Strain	1.98	%/min	
Length	201.85	mm	Cell Pressure	190	kPa	
Diameter	100.87	mm	Axial Strain at failure	19.9	%	
Bulk Density	2.24	Mg/m3	Deviator Stress, (σ1 - σ3)f	200	kPa	
Moisture Content	11	%	Undrained Shear Strength, cu	100	kPa	½(σ1 - σ3)f
Dry Density	2.02	Mg/m3	Mode of Failure	Compound		
Membrane Correction	0.95	kPa	Membrane thickness	0.25	mm	

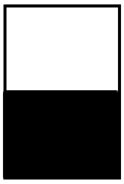
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

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Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS TESTING
4041

TEST CERTIFICATE

Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Analytical i2 Environmental Science

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	17/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

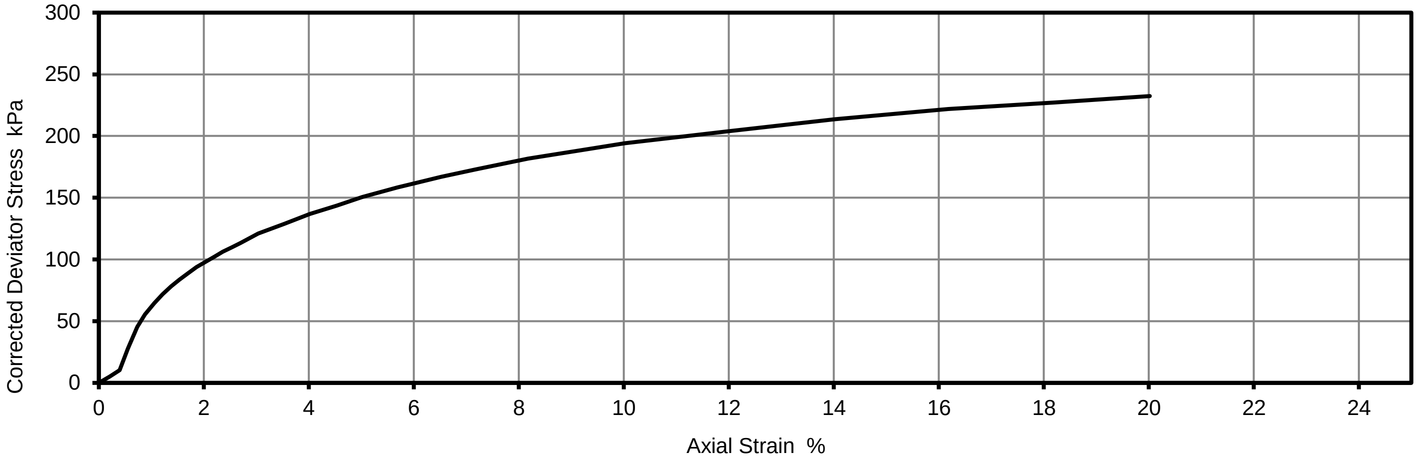
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

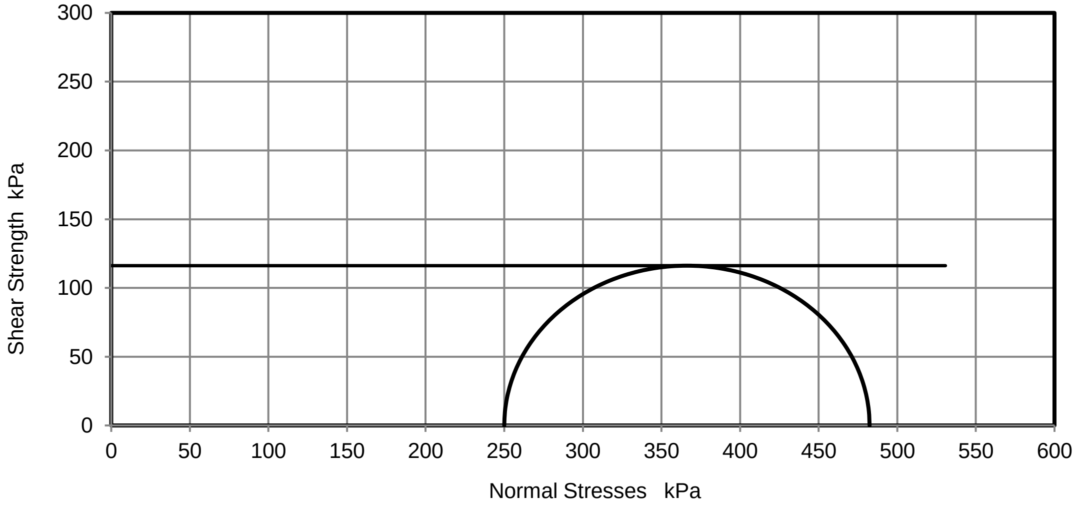
Laboratory Reference:	2006862	Depth Top [m]:	12.50
Hole No.:	BH106	Depth Base [m]:	12.95
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Brown slightly gravelly slightly sandy CLAY		

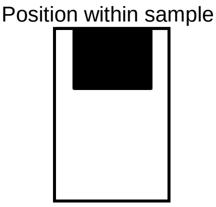
Test Number	1		Rate of Strain	2.00	%/min
Length	139.97	mm	Cell Pressure	250	kPa
Diameter	69.90	mm	Axial Strain at failure	20.0	%
Bulk Density	2.18	Mg/m3	Deviator Stress, (σ1 - σ3)f	232	kPa
Moisture Content	14	%	Undrained Shear Strength, cu	116	kPa ½(σ1 - σ3)f
Dry Density	1.91	Mg/m3	Mode of Failure	Plastic	
Membrane Correction	1.27	kPa	Membrane thickness	0.23	mm

Deviator Stress v Axial Strain



Mohr Circles





Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE
Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	17/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

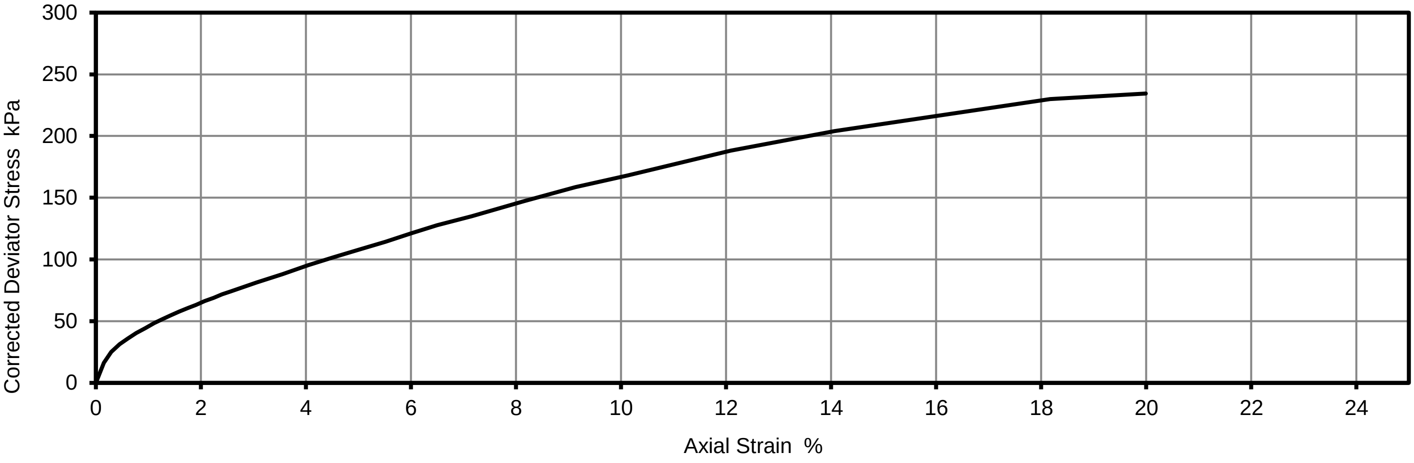
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

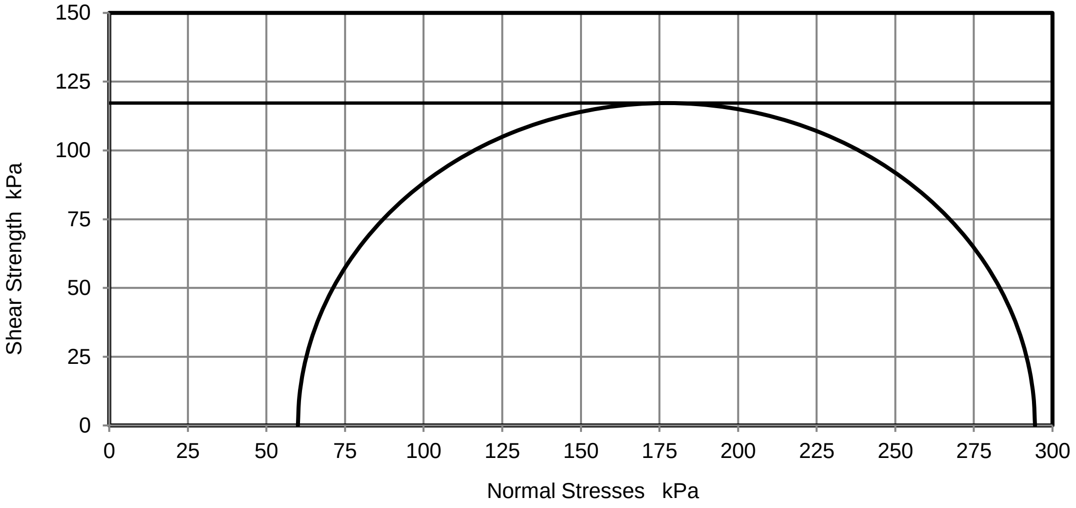
Laboratory Reference:	2006863	Depth Top [m]:	3.00
Hole No.:	BH105	Depth Base [m]:	3.45
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Brown slightly gravelly slightly sandy CLAY		

Test Number	1		Rate of Strain	1.97	%/min	
Length	203.19	mm	Cell Pressure	60	kPa	
Diameter	102.03	mm	Axial Strain at failure	20.0	%	
Bulk Density	2.17	Mg/m3	Deviator Stress, (σ1 - σ3)f	234	kPa	
Moisture Content	19	%	Undrained Shear Strength, cu	117	kPa	½(σ1 - σ3)f
Dry Density	1.83	Mg/m3	Mode of Failure	Plastic		
Membrane Correction	1.02	kPa	Membrane thickness	0.27	mm	

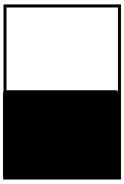
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 17/09/2021
Sampled By: i2 - R.S

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

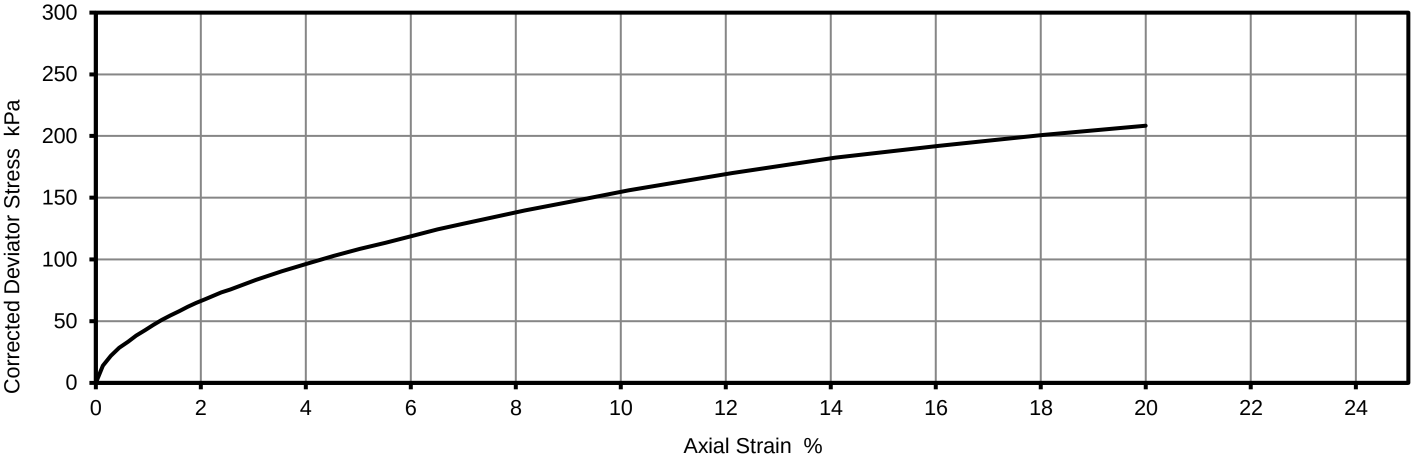
Test Results:

Laboratory Reference: 2006864
Hole No.: BH105
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY

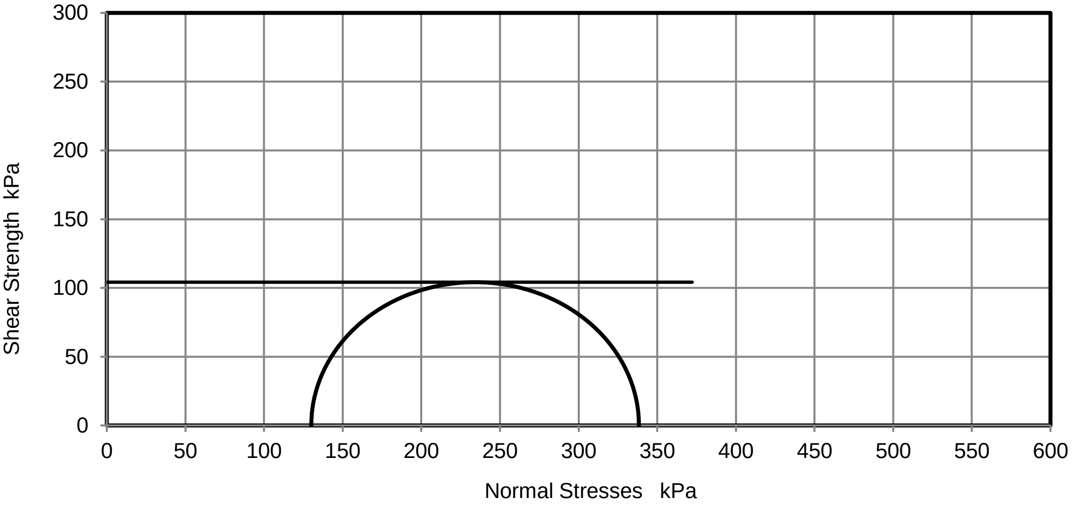
Depth Top [m]: 6.50
Depth Base [m]: 6.95
Sample Type: U

Test Number	1		Rate of Strain	1.97	%/min	
Length	202.89	mm	Cell Pressure	130	kPa	
Diameter	101.62	mm	Axial Strain at failure	20.0	%	
Bulk Density	2.24	Mg/m3	Deviator Stress, (σ1 - σ3)f	208	kPa	
Moisture Content	15	%	Undrained Shear Strength, cu	104	kPa	½(σ1 - σ3)f
Dry Density	1.95	Mg/m3	Mode of Failure	Plastic		
Membrane Correction	0.87	kPa	Membrane thickness	0.23	mm	

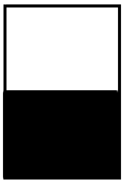
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

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PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	17/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

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

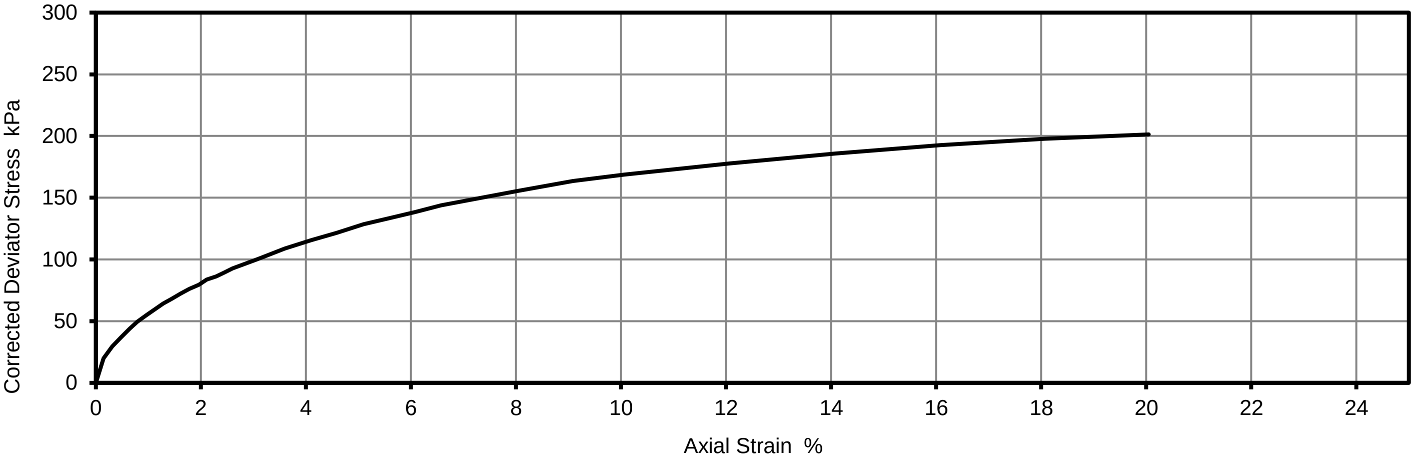
---

Test Results:

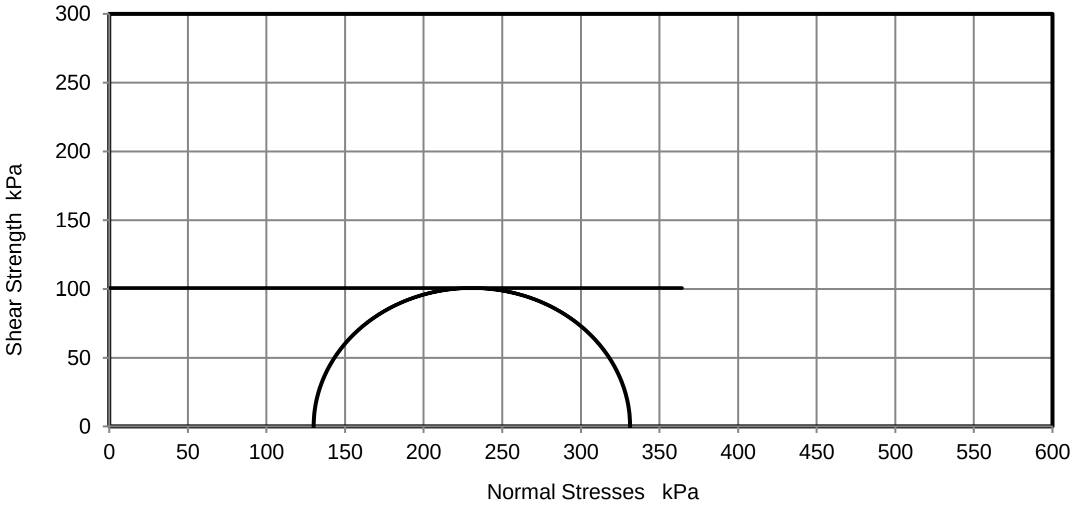
Laboratory Reference:	2006865	Depth Top [m]:	6.50
Hole No.:	BH107A	Depth Base [m]:	6.95
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Brown slightly gravelly very sandy CLAY		

Test Number	1		Rate of Strain	2.00	%/min	
Length	139.77	mm	Cell Pressure	130	kPa	
Diameter	69.47	mm	Axial Strain at failure	20.0	%	
Bulk Density	2.20	Mg/m3	Deviator Stress, (σ1 - σ3)f	201	kPa	
Moisture Content	17	%	Undrained Shear Strength, cu	101	kPa	½(σ1 - σ3)f
Dry Density	1.87	Mg/m3	Mode of Failure	Plastic		
Membrane Correction	1.61	kPa	Membrane thickness	0.29	mm	

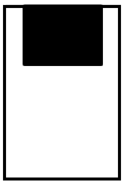
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS TESTING 4041

TEST CERTIFICATE

Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Analytical i2 Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 17/09/2021
Sampled By: i2 - R.S

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

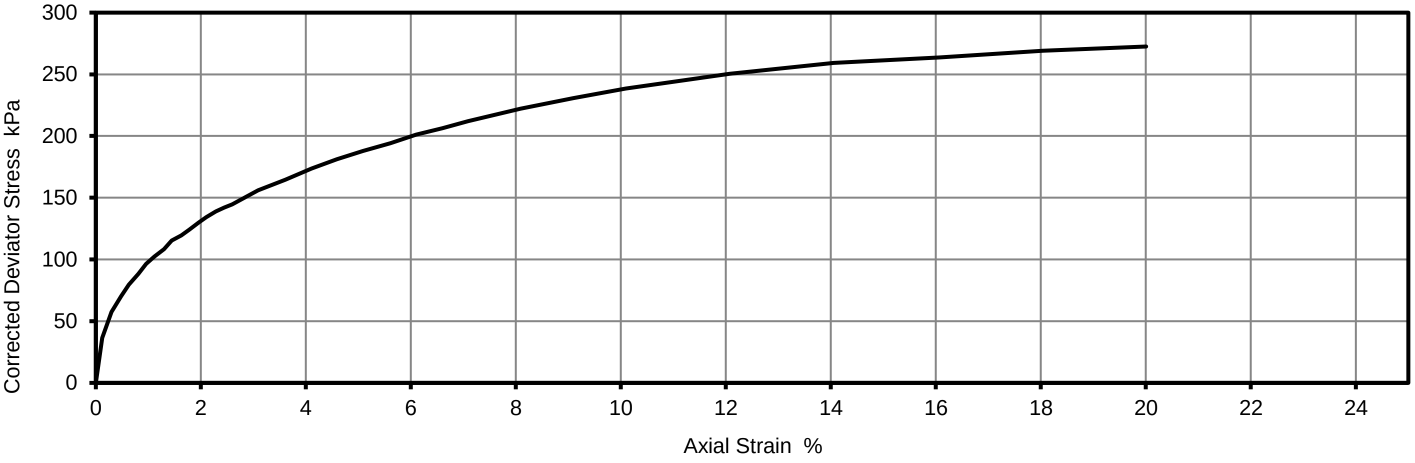
Test Results:

Laboratory Reference: 2006866
Hole No.: BH101
Sample Reference: Not Given
Sample Description: Brown slightly sandy CLAY

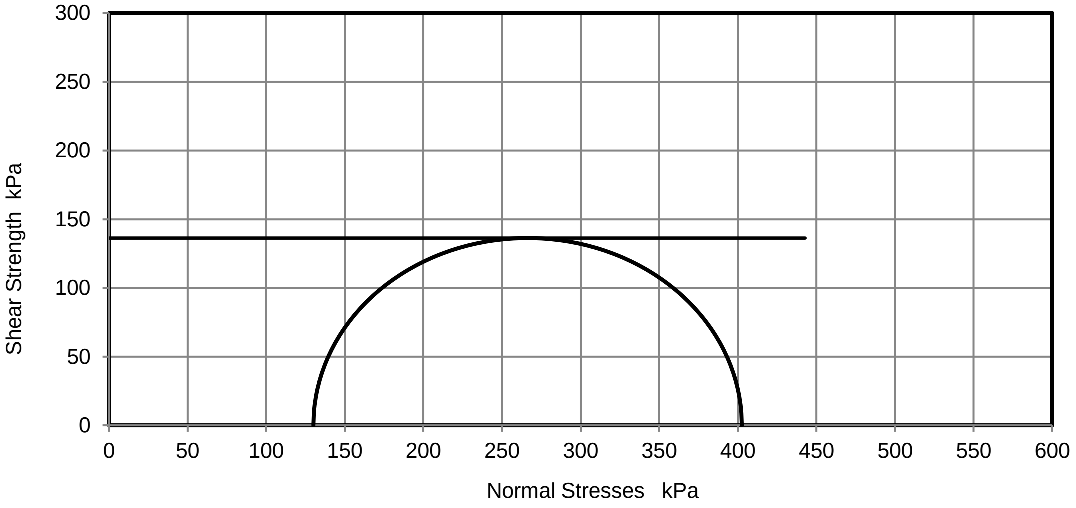
Depth Top [m]: 6.50
Depth Base [m]: 6.95
Sample Type: U

Test Number	1		Rate of Strain	2.00	%/min	
Length	139.66	mm	Cell Pressure	130	kPa	
Diameter	69.67	mm	Axial Strain at failure	20.0	%	
Bulk Density	2.07	Mg/m3	Deviator Stress, (σ1 - σ3)f	273	kPa	
Moisture Content	22	%	Undrained Shear Strength, cu	136	kPa	½(σ1 - σ3)f
Dry Density	1.69	Mg/m3	Mode of Failure	Plastic		
Membrane Correction	1.55	kPa	Membrane thickness	0.28	mm	

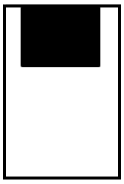
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	17/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

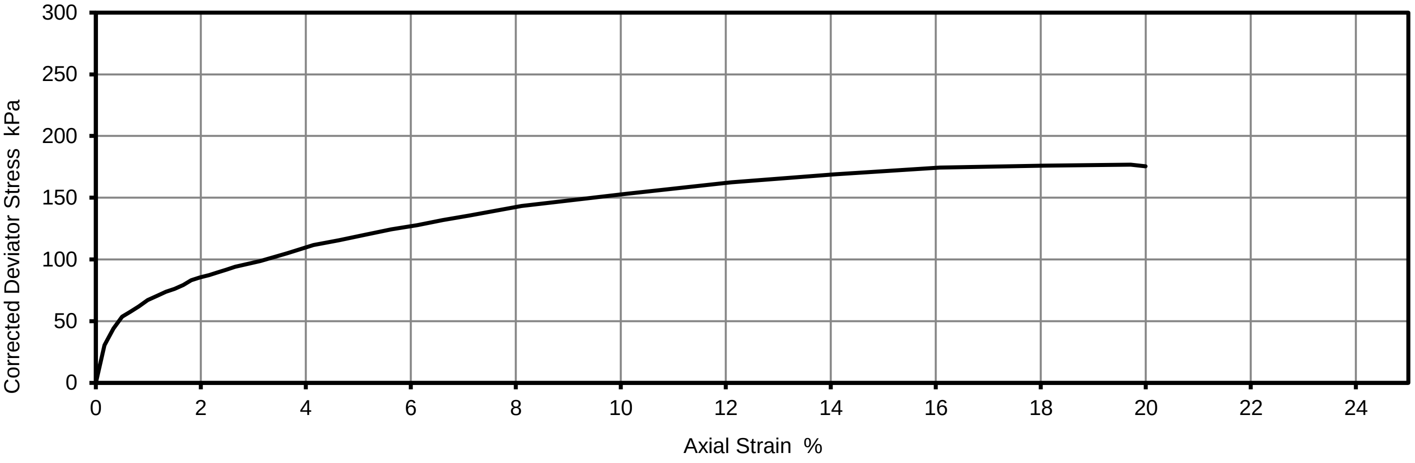
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

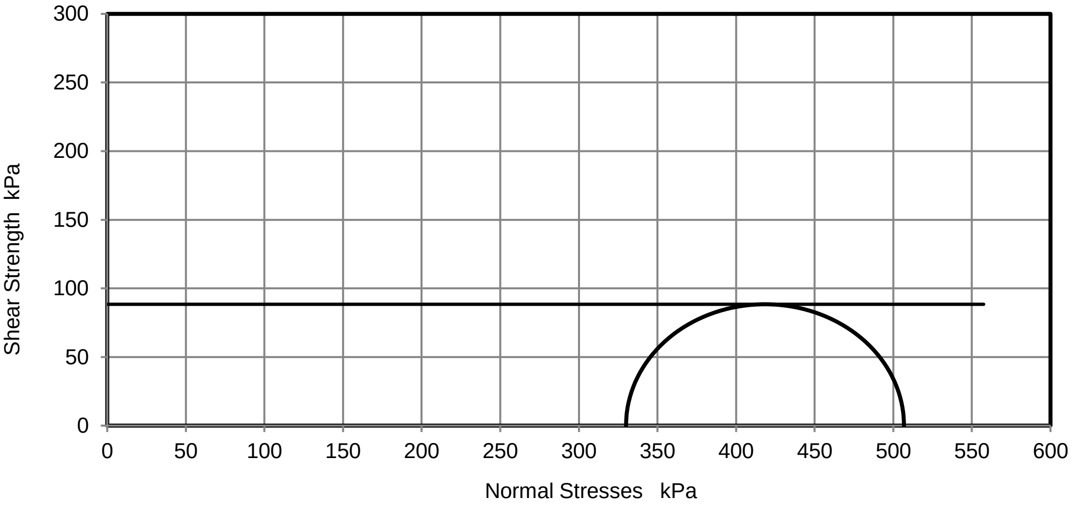
Laboratory Reference:	2006867	Depth Top [m]:	17.00
Hole No.:	BH101	Depth Base [m]:	17.45
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Brown slightly gravelly slightly sandy CLAY		

Test Number	1		Rate of Strain	2.00	%/min	
Length	139.49	mm	Cell Pressure	330	kPa	
Diameter	69.47	mm	Axial Strain at failure	19.7	%	
Bulk Density	2.03	Mg/m3	Deviator Stress, (σ1 - σ3)f	177	kPa	
Moisture Content	23	%	Undrained Shear Strength, cu	88	kPa	½(σ1 - σ3)f
Dry Density	1.65	Mg/m3	Mode of Failure	Compound		
Membrane Correction	1.53	kPa	Membrane thickness	0.28	mm	

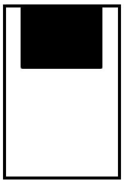
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 20/09/2021
Sampled By: i2 - R.S

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

Test Results:

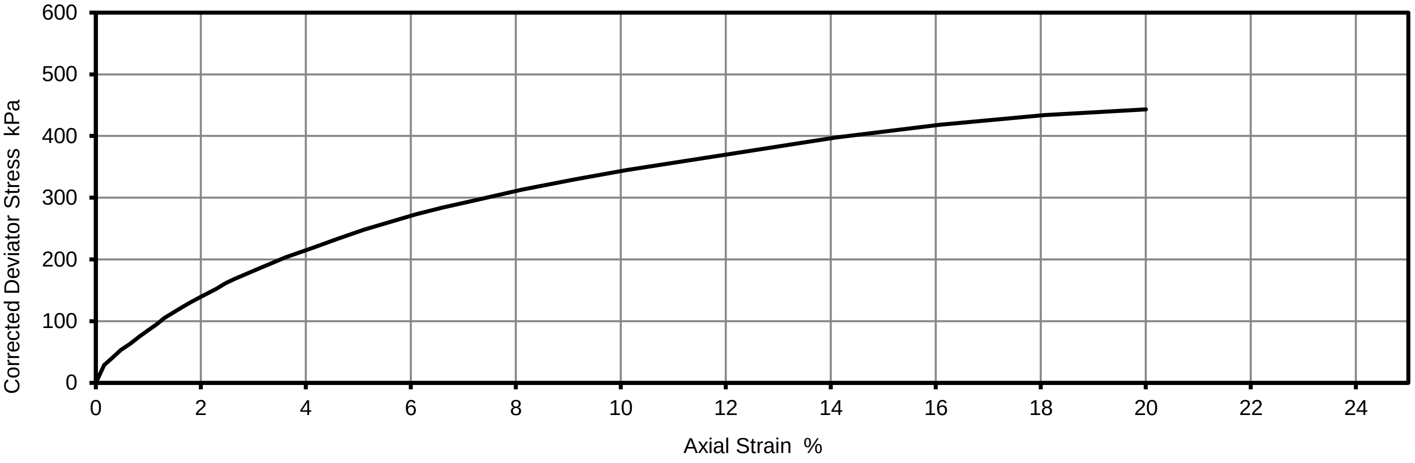
Laboratory Reference: 2011183
Hole No.: BH109
Sample Reference: Not Given
Sample Description: Greyish brown slightly gravelly sandy CLAY

Depth Top [m]: 2.00
Depth Base [m]: 2.45
Sample Type: U

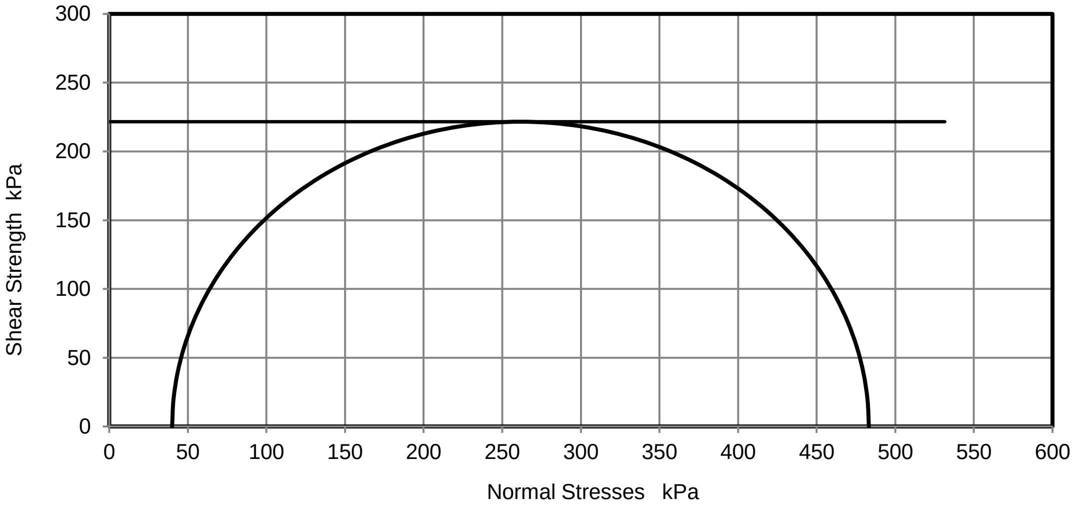
Test Number	1	
Length	140.34	mm
Diameter	69.15	mm
Bulk Density	2.19	Mg/m3
Moisture Content	18	%
Dry Density	1.86	Mg/m3
Membrane Correction	1.56	kPa

Rate of Strain	2.00	%/min	
Cell Pressure	40	kPa	
Axial Strain at failure	20.0	%	
Deviator Stress, (σ1 - σ3)f	443	kPa	
Undrained Shear Strength, cu	222	kPa	½(σ1 - σ3)f
Mode of Failure	Plastic		
Membrane thickness	0.28	mm	

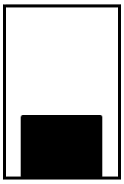
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

TEST CERTIFICATE

Unconsolidated Undrained Triaxial Compression

Tested in Accordance with:
BS 1377-7: 1990: Clause 8

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

Environmental Science

Client: Hydrock Consultants Ltd

Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY

Contact: Russell Sumner

Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 20/09/2021
Sampled By: i2 - R.S

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

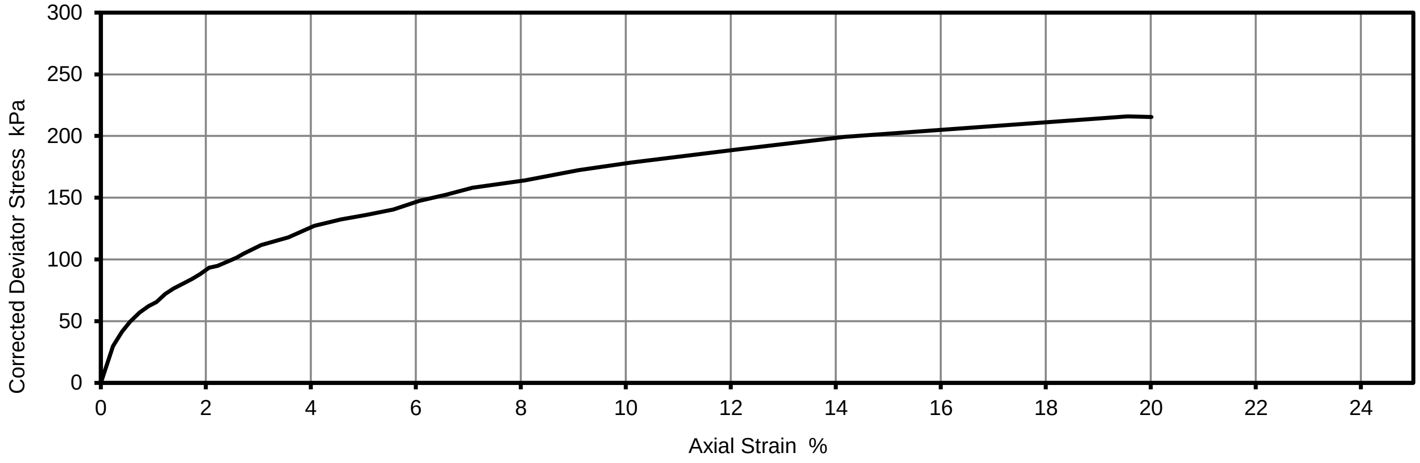
Test Results:

Laboratory Reference: 2011184
Hole No.: BH109
Sample Reference: Not Given
Sample Description: Greyish brown slightly sandy gravelly CLAY

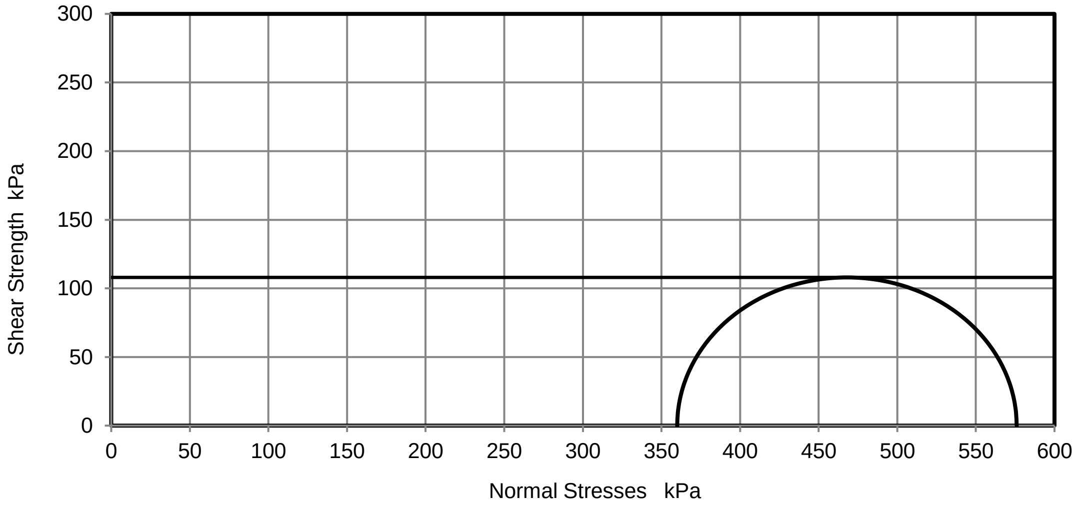
Depth Top [m]: 18.50
Depth Base [m]: 18.95
Sample Type: U

Test Number	1		Rate of Strain	2.00	%/min	
Length	98.89	mm	Cell Pressure	360	kPa	
Diameter	49.74	mm	Axial Strain at failure	19.6	%	
Bulk Density	2.28	Mg/m3	Deviator Stress, (σ1 - σ3)f	216	kPa	
Moisture Content	13	%	Undrained Shear Strength, cu	108	kPa	½(σ1 - σ3)f
Dry Density	2.02	Mg/m3	Mode of Failure	Plastic		
Membrane Correction	2.20	kPa	Membrane thickness	0.29	mm	

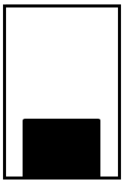
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377.
This is provided for information only.

Remarks:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS
TESTING
4041

SUMMARY REPORT

Summary of Point Load Strength Index Tests Results

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

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

Analytical i2
Environmental Science

Client: Hydrock Consultants Ltd

Client Address:
4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY

Contact: Russell Sumner

Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 23/09 - 15/10/2021
Sampled By: i2 - R.S

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks # (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index	
		Reference	Depth Top m	Depth Base m	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is MPa	Is(50) MPa
2006889	BH106	Not Given	24.45	24.65	C	Brown SILTSTONE	WC = 13.6%	1	A	U	YES	-	85.8	46.0	39.0	0.4	65.3	0.09	0.11
2006893	BH106	Not Given	25.60	25.70	C	Brown to grey stiff CLAY	WC = 17.0%	1	A	P	YES	-	84.8	61.0	55.0	0.4	77.1	0.06	0.07
2006894	BH106	Not Given	26.00	26.29	C	Brown to grey stiff CLAY	WC = 13.5%	1	A	P	YES	-	85.9	49.0	45.0	0.3	70.2	0.06	0.07
2006894	BH106	Not Given	26.00	26.29	C	Brown to grey stiff CLAY	WC = 13.5%	2	A	P	YES	-	85.7	35.0	30.0	0.3	57.2	0.08	0.08
2006895	BH106	Not Given	27.35	27.50	C	Brown to grey SILTSTONE	WC = 9.3%	1	A	P	YES	-	86.1	52.0	41.0	0.9	67.0	0.19	0.22
2006895	BH106	Not Given	27.35	27.50	C	Brown to grey SILTSTONE	WC = 9.3%	2	A	P	YES	-	86.2	31.0	25.0	0.6	52.4	0.22	0.22
2006890	BH106	Not Given	28.68	28.68	C	Brown to grey SILTSTONE	WC = 11.3%	1	A	P	YES	-	85.8	71.0	56.0	0.4	78.2	0.07	0.08
2006891	BH106	Not Given	29.15	29.25	C	Brown SILTSTONE	WC = 8.8%	1	A	U	YES	-	86.3	72.0	68.0	0.2	86.4	0.03	0.03
2006892	BH106	Not Given	30.60	30.81	C	Brown to grey SILTSTONE	WC = 15.0%	1	A	U	YES	-	86.4	60.0	38.0	0.5	64.7	0.12	0.13
2006896	BH106	Not Given	31.65	31.81	C	Brown to grey SILTSTONE	WC = 14.7%	1	A	P	YES	-	86.3	54.0	47.0	0.2	71.9	0.04	0.05

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
Dimensions: Dps - Distance between platens (platen separation), Dps' - at failure (see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Comments:

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

4041

SUMMARY REPORT

Summary of Point Load Strength Index Tests Results

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

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

Environmental Science

Client: Hydrock Consultants Ltd

Client Address:
4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY

Contact: Russell Sumner

Site Address: Garth Wymott 2

Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 15/10/2021
Sampled By: i2 - R.S

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks # (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index	
		Reference	Depth Top m	Depth Base m	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa
2006896	BH106	Not Given	31.65	31.81	C	Brown to grey SILTSTONE	WC = 14.7%	2	A	P	YES	-	86.1	41.0	32.0	0.1	59.2	0.03	0.03

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
Dimensions: Dps - Distance between platens (platen separation), Dps' - at failure (see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Comments:

Signed:

Monika

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS TESTING
4041

TEST CERTIFICATE

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with: BS 1377-5:1990: Clause 3

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

Analytical i2
Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside, Festival Park,
Stoke on Trent, ST1 5RY
Contact: Russell Sumner
Site Address: Garth Wymott 2

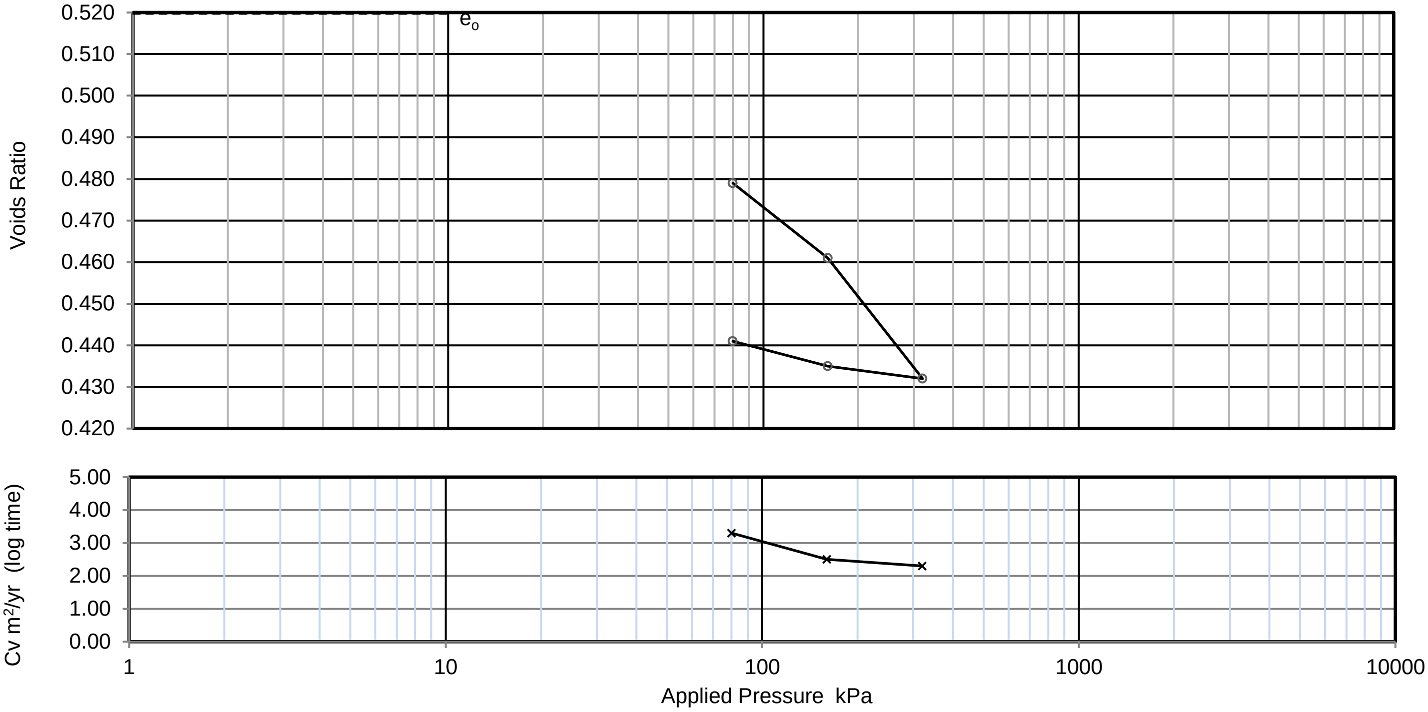
Client Reference: C-19851-C
Job Number: 21-98690
Date Sampled: Not Given
Date Received: 13/09/2021
Date Tested: 16/09/2021
Sampled By: i2 - R.S

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

Test Results:

Laboratory Reference: 2006859
Hole No.: BH108
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 4.00
Depth Base [m]: 4.45
Sample Type: U



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root m2/yr	Csec
0	0.520	-	-	-	-
80	0.479	0.34	3.3	5.2	0.00064
160	0.461	0.15	2.5	2.5	0.00093
320	0.432	0.12	2.3	1.9	0.0013
160	0.435	0.013			
80	0.441	0.054			

Preparation
Sample squeezed out of core

Index tests			
Orientation of the sample	Vertical		
Particle density	assumed	2.65	Mg/m3
Liquid limit	N/A		%
Plastic limit	N/A		%

Specimen details	Initial	Final	
Diameter	50.06	-	mm
Height	20.03	19.00	mm
Moisture Content	21	19	%
Bulk density	2.11	2.19	Mg/m3
Dry density	1.74	1.84	Mg/m3
Voids Ratio	0.520	0.441	
Saturation	108	115	%
Avg. temperature for test	22.0		°C
Swelling Pressure	Not measured		kPa
Settlement on saturation			%
Total test time	5		days

Note: Cv corrected to 20°C

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS TESTING
4041

TEST CERTIFICATE

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with: BS 1377-5:1990: Clause 3

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

Analytical i2 Environmental Science

Client:	Hydrock Consultants Ltd
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY
Contact:	Russell Sumner
Site Address:	Garth Wymott 2

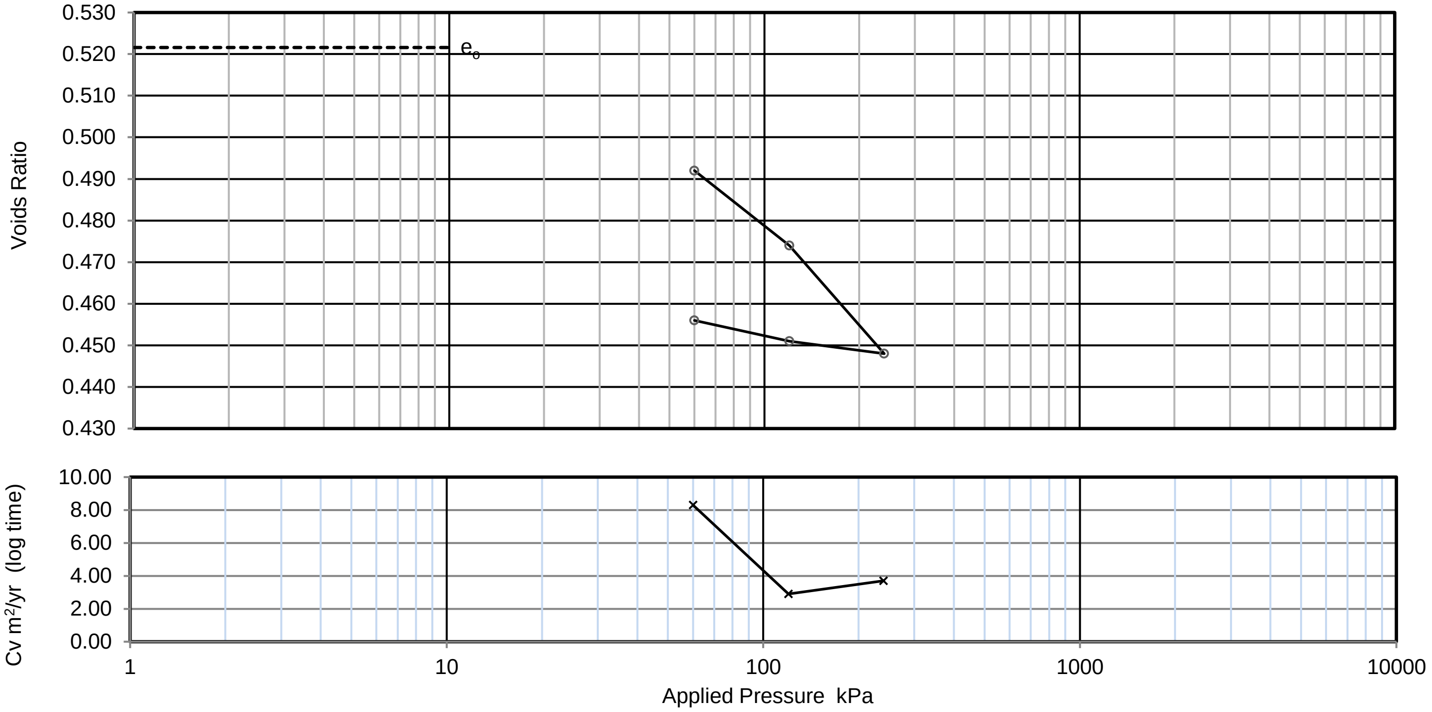
Client Reference:	C-19851-C
Job Number:	21-98690
Date Sampled:	Not Given
Date Received:	13/09/2021
Date Tested:	16/09/2021
Sampled By:	i2 - R.S

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

Test Results:

Laboratory Reference:	2006863
Hole No.:	BH105
Sample Reference:	Not Given
Sample Description:	Brown slightly gravelly slightly sandy CLAY

Depth Top [m]:	3.00
Depth Base [m]:	3.45
Sample Type:	U



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root m2/yr	Csec
0	0.522	-	-	-	-
60	0.492	0.32	8.3	13	0.00062
120	0.474	0.2	2.9	6.9	0.0008
240	0.448	0.15	3.7	6.9	0.0013
120	0.451	0.017			
60	0.456	0.06			

Preparation

Sample squeezed out of core

Index tests			
Orientation of the sample	Vertical		
Particle density	assumed	2.65	Mg/m3
Liquid limit	N/A		%
Plastic limit	N/A		%

Specimen details	Initial	Final	
Diameter	50.05	-	mm
Height	20.09	19.22	mm
Moisture Content	19	19	%
Bulk density	2.08	2.16	Mg/m3
Dry density	1.74	1.82	Mg/m3
Voids Ratio	0.522	0.456	
Saturation	98	108	%
Avg. temperature for test	22.0		°C
Swelling Pressure	Not measured		kPa
Settlement on saturation			%
Total test time	5		days

Note: Cv corrected to 20°C

Remarks:

Signed: Monika Janoszek

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

UKAS
TESTING
4041

TEST CERTIFICATE

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with: BS 1377-5:1990: Clause 3

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

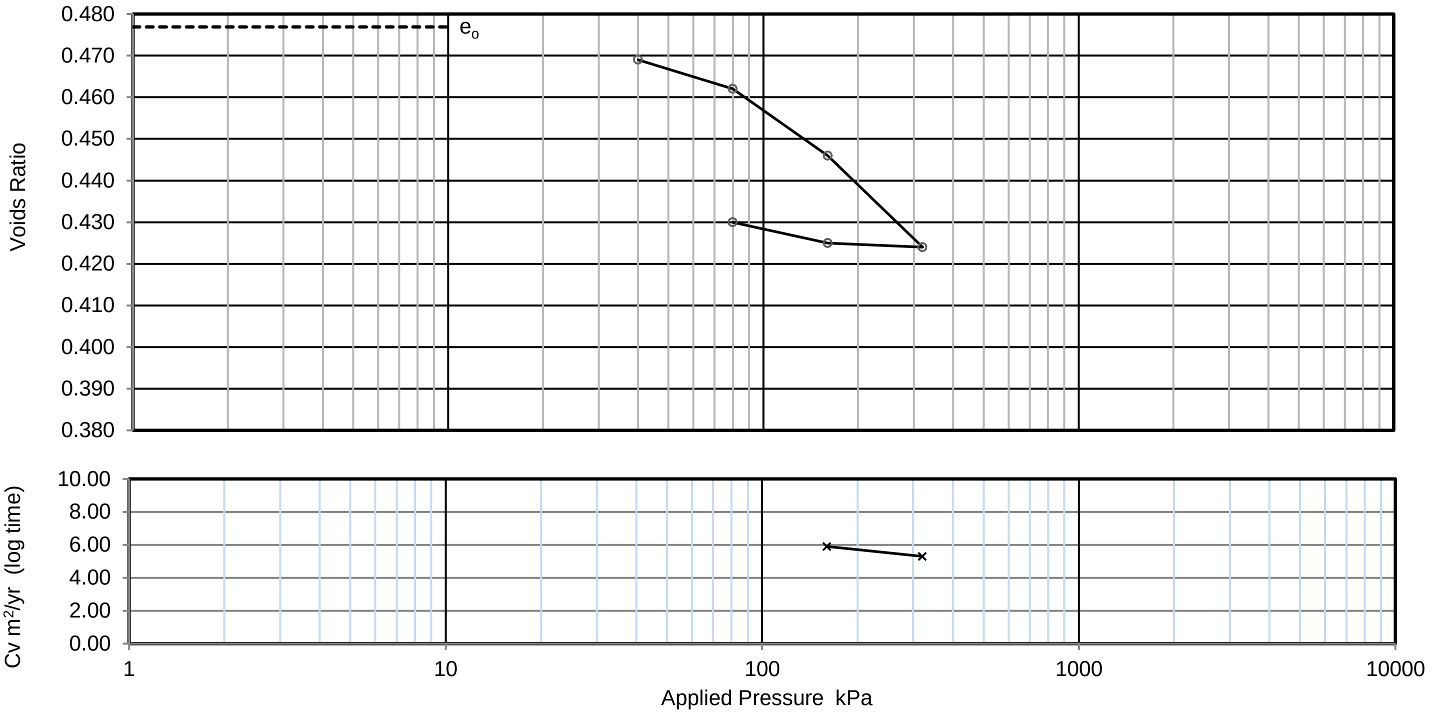
Analytical i2
Environmental Science

Client:	Hydrock Consultants Ltd	Client Reference:	C-19851-C
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-98690
		Date Sampled:	Not Given
		Date Received:	13/09/2021
Contact:	Russell Sumner	Date Tested:	16/09/2021
Site Address:	Garth Wymott 2	Sampled By:	i2 - R.S

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

Test Results:

Laboratory Reference:	2011183	Depth Top [m]:	2.00
Hole No.:	BH109	Depth Base [m]:	2.45
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Greyish brown slightly gravelly sandy CLAY		



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root m2/yr	Csec
0	0.477	-	-	-	-
40	0.469	0.13	N/A	N/A	N/A
80	0.462	0.12	N/A	11	N/A
160	0.446	0.14	5.9	11	0.00062
320	0.424	0.097	5.3	12	0.0011
160	0.425	0.0052			
80	0.430	0.046			

Preparation

Sample squeezed out of core

Index tests			
Orientation of the sample	Vertical		
Particle density	assumed	2.65	Mg/m3
Liquid limit	N/A		%
Plastic limit	N/A		%

Specimen details	Initial	Final	
Diameter	50.00	-	mm
Height	20.10	19.46	mm
Moisture Content	17	18	%
Bulk density	2.11	2.19	Mg/m3
Dry density	1.79	1.85	Mg/m3
Voids Ratio	0.477	0.430	
Saturation	96	111	%
Avg. temperature for test	22.0		°C
Swelling Pressure	Not measured		kPa
Settlement on saturation			%
Total test time	5		days

Note: Cv corrected to 20°C

Remarks: stage1-swelling

Signed:

Monika Janoszek
PL Deputy Geotechnical Laboratory Manager
for and on behalf of i2 Analytical Ltd

Date Reported: 18/10/2021

Russell Sumner
Hydrock Consultants Ltd
4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY

t: 01782 261919
f: 01782 262020
e: Russellsumner@hydrock.com

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

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

Analytical Report Number : 21-98695

Project / Site name:	Garth Wymott 2	**Samples received on:**	13/09/2021
Your job number:	C-19851-C	**Samples instructed on/ Analysis started on:**	13/09/2021
Your order number:	PO09572	**Analysis completed by:**	24/09/2021
Report Issue Number:	1	**Report issued on:**	24/09/2021
Samples Analysed:	2 soil samples		

Signed: Karoline Marek

Karolina Marek
PL Head of 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.

Analytical Report Number: 21-98695
Project / Site name: Garth Wymott 2
Your Order No: PO09572

Lab Sample Number				2006918	2006919
Sample Reference				WS102	WS102
Sample Number				4	6
Depth (m)				2.00-2.45	1.65-1.65
Date Sampled					
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	16
Total mass of sample received	kg	0.001	NONE	0.30	0.50

General Inorganics

Organic Matter (automated)	%	0.1	MCERTS	1.2	1.2

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

Analytical Report Number : 21-98695
Project / Site name: Garth Wymott 2

* 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 *
2006918	WS102	4	2.00-2.45	Brown clay.
2006919	WS102	6	1.65-1.65	Brown clay.

Analytical Report Number : 21-98695
Project / Site name: Garth Wymott 2

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

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
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
Organic matter (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

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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

LWD results sheets

TEST CERTIFICATE

Determination of Dynamic Plate test

Tested in accordance with In House Procedure based upon SHW Design manual IAN73/06

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

Client: Hydrock Consultants Ltd.

Client Address: Over Court Barn, Over Lane,
Almondsbury
Bristol

Client Postcode: BS32 4DF

Contact: Russell Sumner

Testing Carried Out At: Land off Pump house lane, Layland,P26 8NH

Client Reference: PO09000

Job Number: 21-94483_1

Date Tested: 24/08/2021

Location: Various

Tested By: MC

Weather Conditions: Cloudy

Plate Diameter: 300

Equipment ID: 12-1318

Test Results:

Test Location	Client Reference	Source / Supplier	Description	Evd (MPa)	Estimated CBR (%)
CBR120	LWD 1	Unknown	Brown/red CLAY	26.8	1.9
CBR 118	LWD 2	Unknown	Brown/red CLAY	30.0	2.3
CBR 116	LWD 3	Unknown	Brown/red CLAY	27.6	2.0
CBR 117	LWD 4	Unknown	Brown/red CLAY	25.6	1.8
CBR 115	LWD 5	Unknown	Brown/red CLAY	29.0	2.2
CBR 119	LWD 6	Unknown	Brown/red CLAY	28.5	2.1

Signed:

Craig Hawkes
Site Services Operations Supervisor
for and on behalf of i2 Analytical Ltd

SSF125.4

Date Reported: 31/08/2021

TEST CERTIFICATE

Determination of Dynamic Plate test

Tested in accordance with In House Procedure based upon SHW Design manual IAN73/06

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

Client:	Hydrock Consultants Ltd.	Client Reference:	PO09000
Client Address:	Over Court Barn, Over Lane, Almondsbury Bristol	Job Number:	21-94764_1
		Date Tested:	25/08/2021
Client Postcode:	BS32 4DF	Location:	Various
Contact:	Russell Sumner	Tested By:	MC
		Weather Conditions:	Sunny
Testing Carried Out At:	Land off Pump house lane, Layland,P26 8NH	Plate Diameter:	300
		Equipment ID:	12-1318

Test Results:

Test Location	Client Reference	Source / Supplier	Description	Evd (MPa)	Estimated CBR (%)
CBR 105	LWD 1	Unknown	Brown CLAY	17.3	1.0
CBR 106	LWD 2	Unknown	Dark brown CLAY	23.8	1.6
CBR 103	LWD 3	Unknown	Dark brown CLAY	24.2	1.6
CBR 104	LWD 4	Unknown	Grey sandy CLAY	20.3	1.2
CBR 112	LWD 5	Unknown	Dark brown CLAY	25.1	1.7
CBR 107	LWD 6	Unknown	Grey sandy CLAY	26.1	1.9
CBR 113	LWD 7	Unknown	Yellow/grey CLAY	12.9	0.6
CBR 108	LWD 8	Unknown	Grey sandy CLAY	14.0	0.7
CBR 109	LWD 9	Unknown	Slight gravel brown CLAY	49.5	5.0
CBR 101	LWD 10	Unknown	Dark brown CLAY	23.1	1.5
CBR 110	LWD 11	Unknown	Dark brown CLAY	15.1	0.8
CBR 114	LWD 12	Unknown	Dark brown CLAY	25.0	1.7
CBR 111	LWD 13	Unknown	Clayey SAND	37.1	3.2
CBR 102	LWD 14	Unknown	Dark grey CLAY	41.2	3.8
CBR 121	LWD 15	Unknown	Dark grey CLAY	22.6	1.5

Signed:

Craig Hawkes
Site Services Operations Supervisor
for and on behalf of i2 Analytical Ltd

SSF125.4

Date Reported: 31/08/2021

TEST CERTIFICATE

Determination of Dynamic Plate test

Tested in accordance with In House Procedure based upon SHW Design manual IAN73/06

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

Client:	Hydrock Consultants Ltd.
Client Address:	Over Court Barn, Over Lane, Almondsbury Bristol
Client Postcode:	BS32 4DF
Contact:	Russell Sumner
Testing Carried Out At:	Land off Pump house lane, Layland,P26 8NH

Client Reference:	PO09000
Job Number:	21-94764_2
Date Tested:	25/08/2021
Location:	Various
Tested By:	MC
Weather Conditions:	Sunny
Plate Diameter:	300
Equipment ID:	12-1318

Test Results:

Test Location	Client Reference	Source / Supplier	Description	Evd (MPa)	Estimated CBR (%)
CBR 122	LWD 16	Unknown	Dark grey CLAY	24.9	1.7
CBR 124	LWD 17	Unknown	Dark grey CLAY	25.1	1.7
CBR 123	LWD 18	Unknown	Dark grey CLAY	20.1	1.2

Signed:

Craig Hawkes
Site Services Operations Supervisor
for and on behalf of i2 Analytical Ltd

SSF125.4

Date Reported: 31/08/2021

Page: 1 of 1

Geotechnical Plots

Hydrock

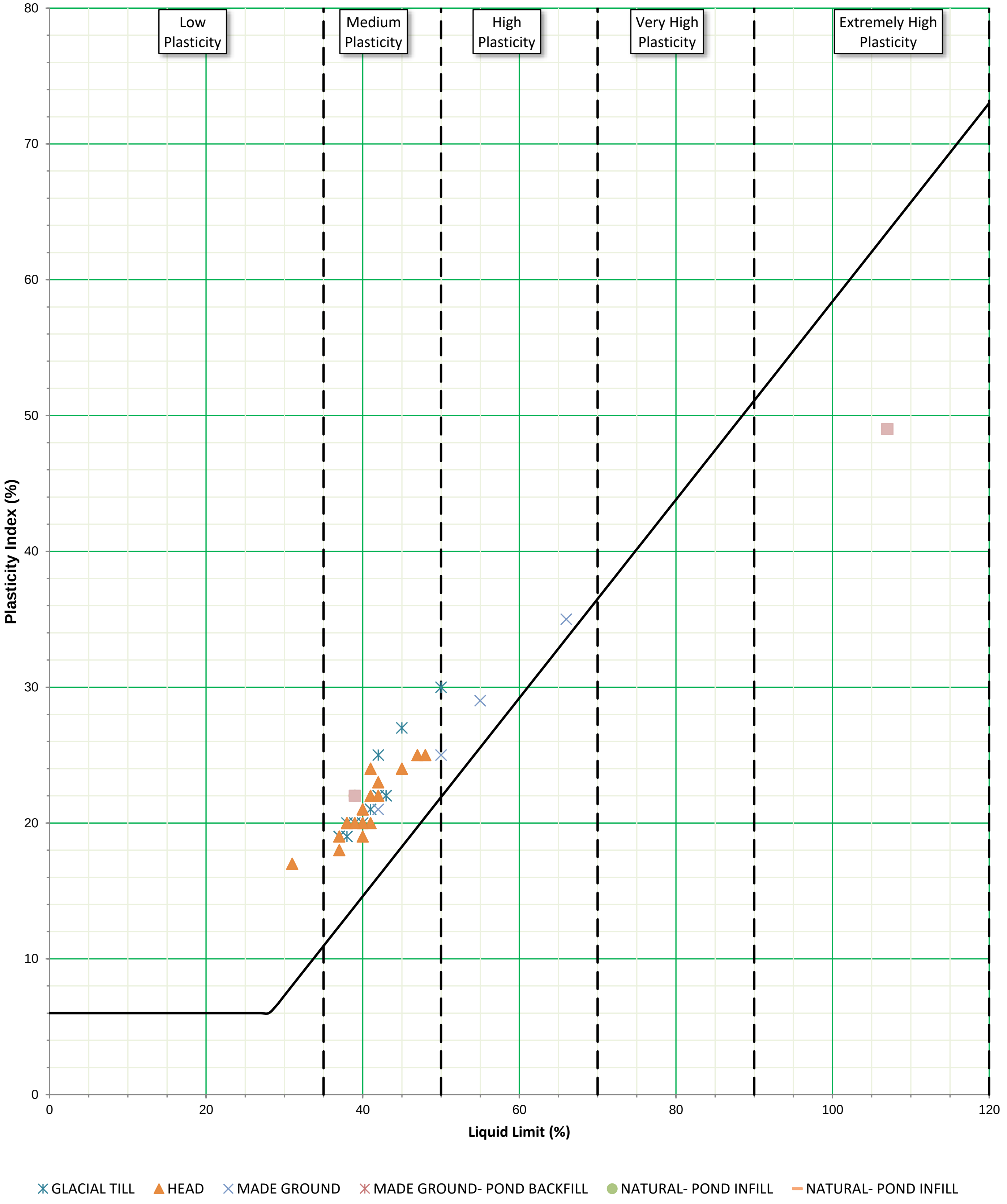
PLASTICITY CLASSIFICATION CHART

Site:
Garth Wymott 2

Client:
Ministry of Justice

Contract No. C-19851

All Data

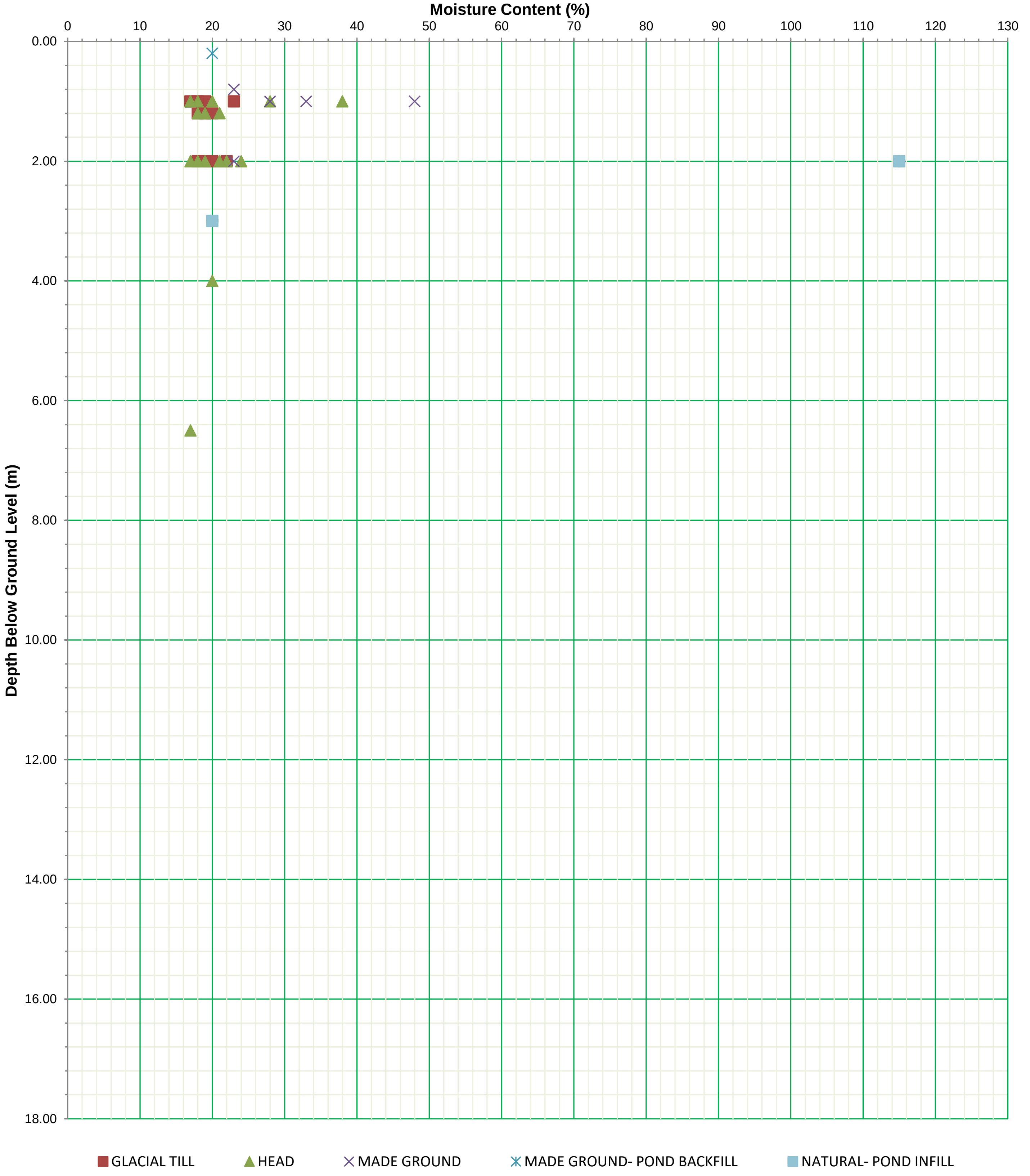


Template Version 1 Template Date 10/07/2019

Hydrock

MOISTURE CONTENT vs DEPTH

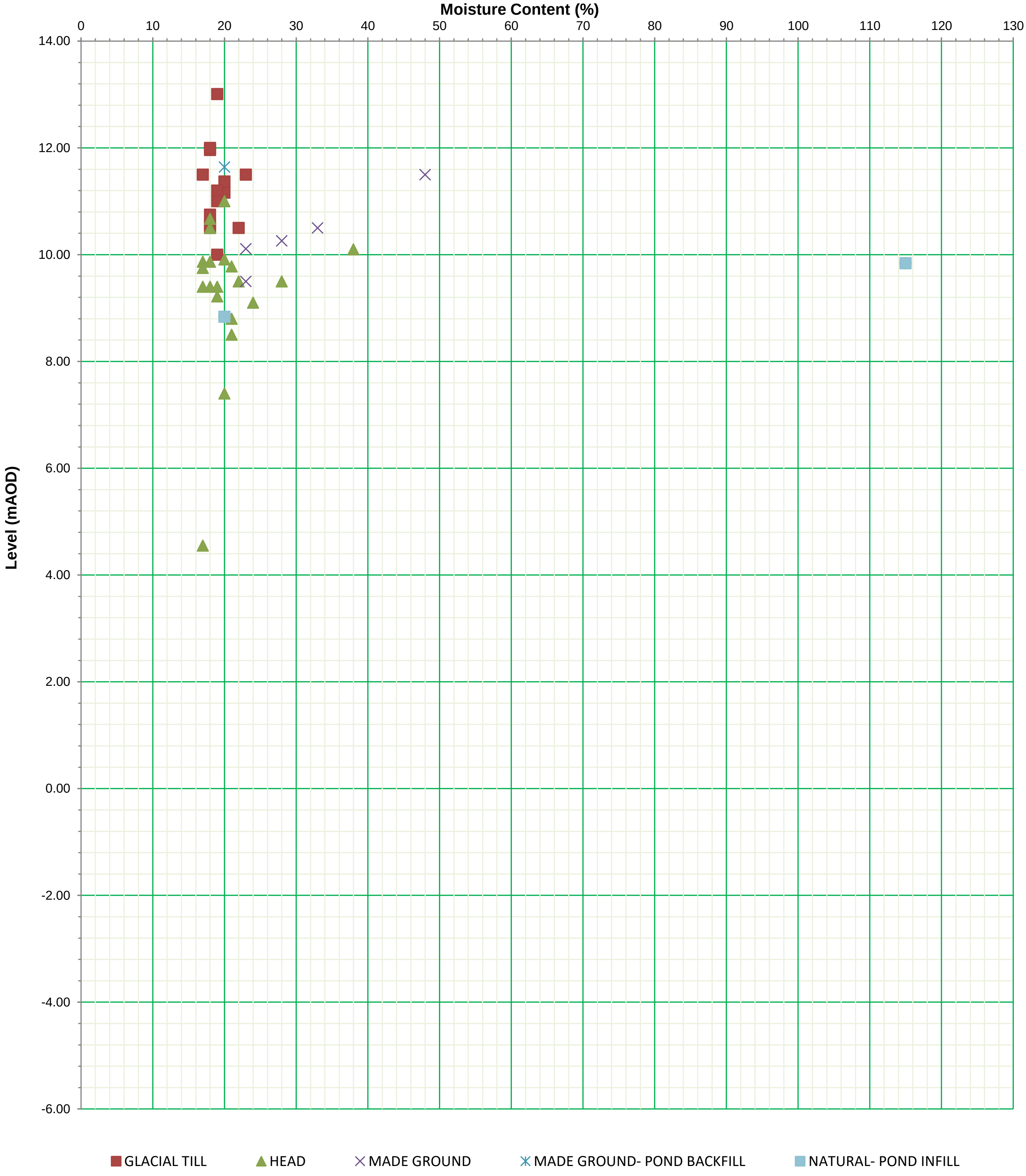
Site: Garth Wymott 2	**Client:** Ministry of Justice	**Contract No.**	C-19851
		All Data	



Template Version	1	Template Date	10/07/2019

MOISTURE CONTENT vs LEVEL

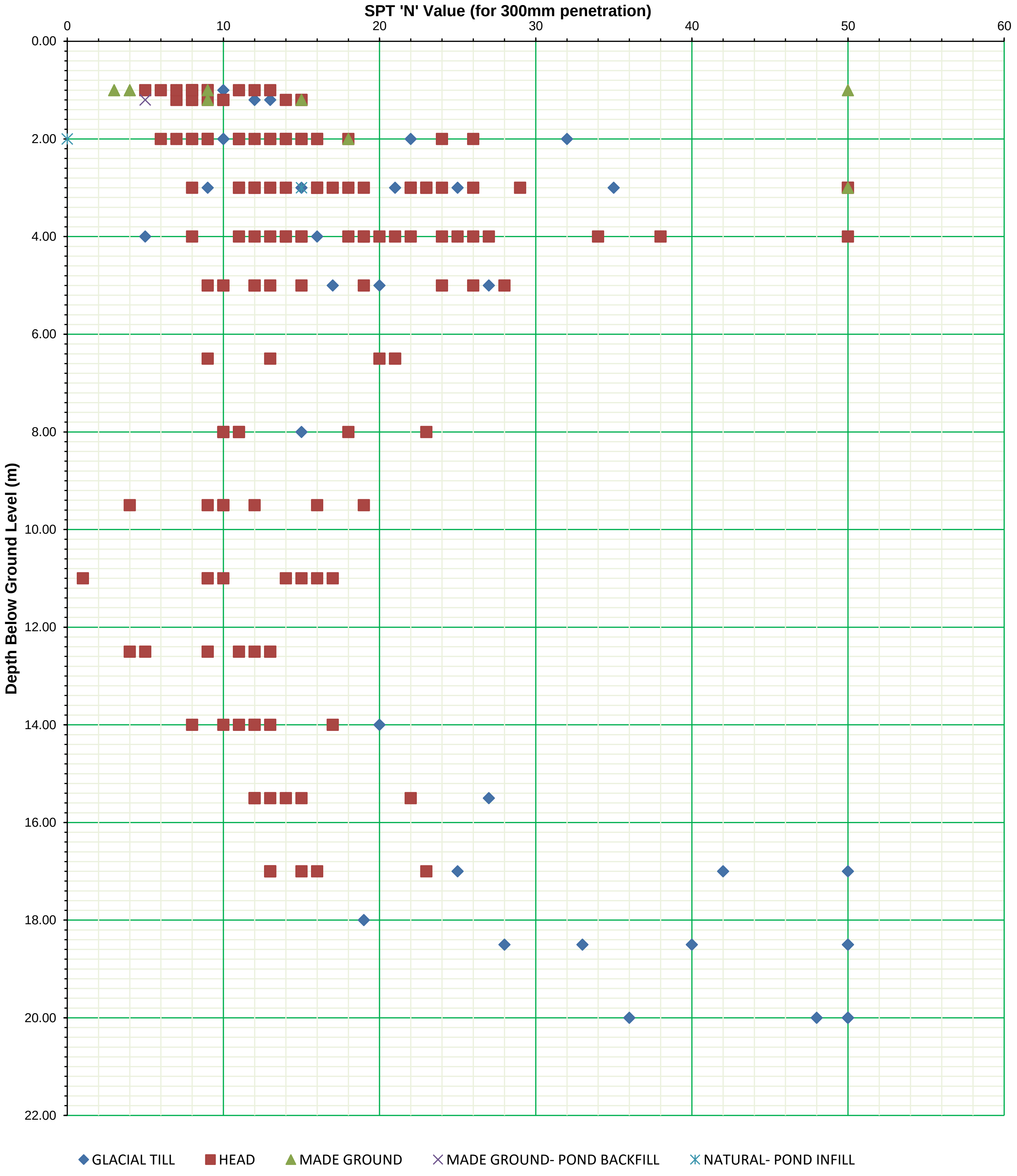
Site: Garth Wymott 2	**Client:** Ministry of Justice	**Contract No.**	C-19851
		All Data	



Template Version 1 Template Date 10/07/2019

Hydrock	# SPT 'N' VALUES vs DEPTH

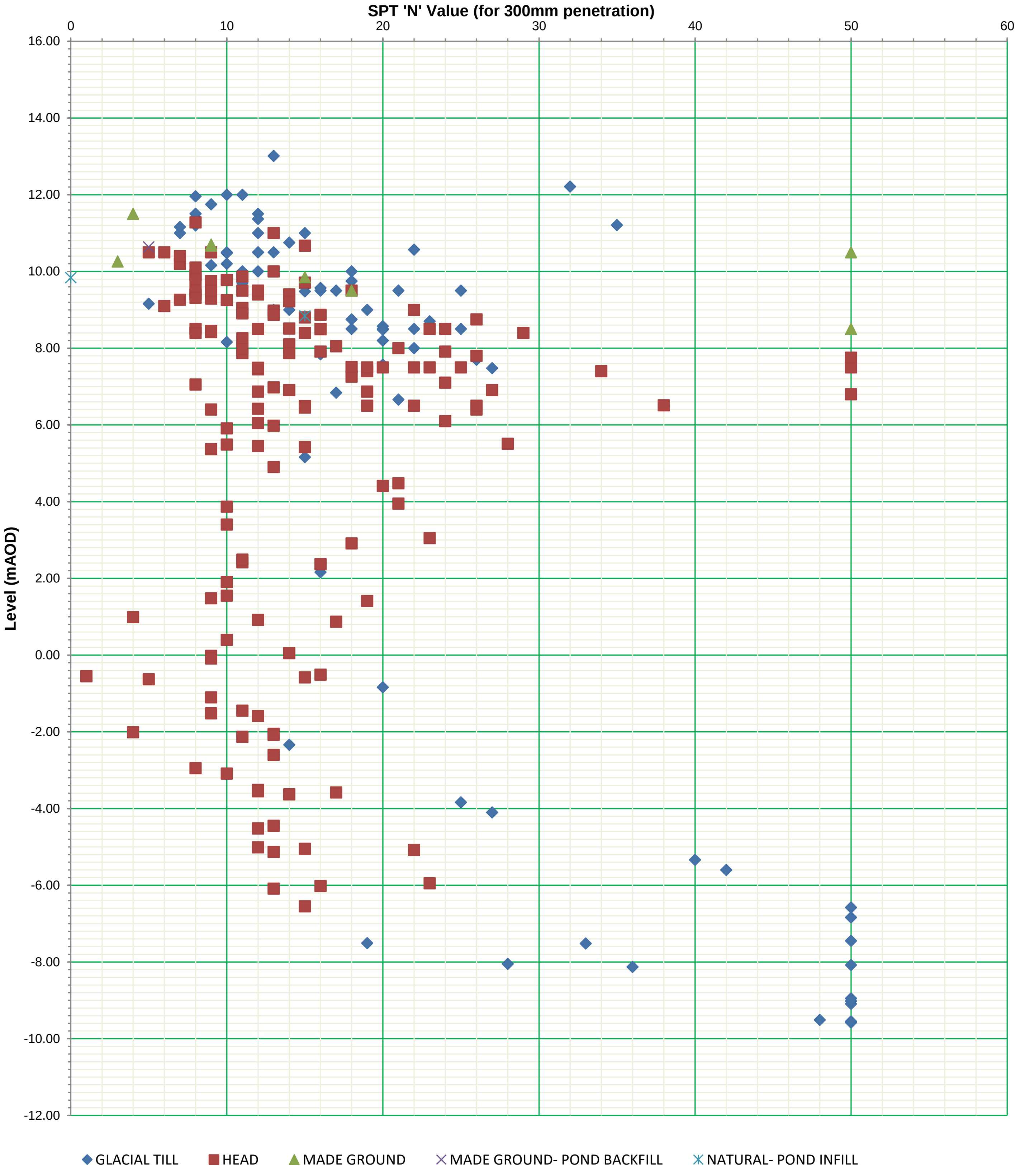
Site: Garth Wymott 2	**Client:** Ministry of Justice	**Contract No.**	C-19851
		All Data	



Template Version	1	Template Date	10/07/2019

SPT 'N' VALUES vs LEVEL

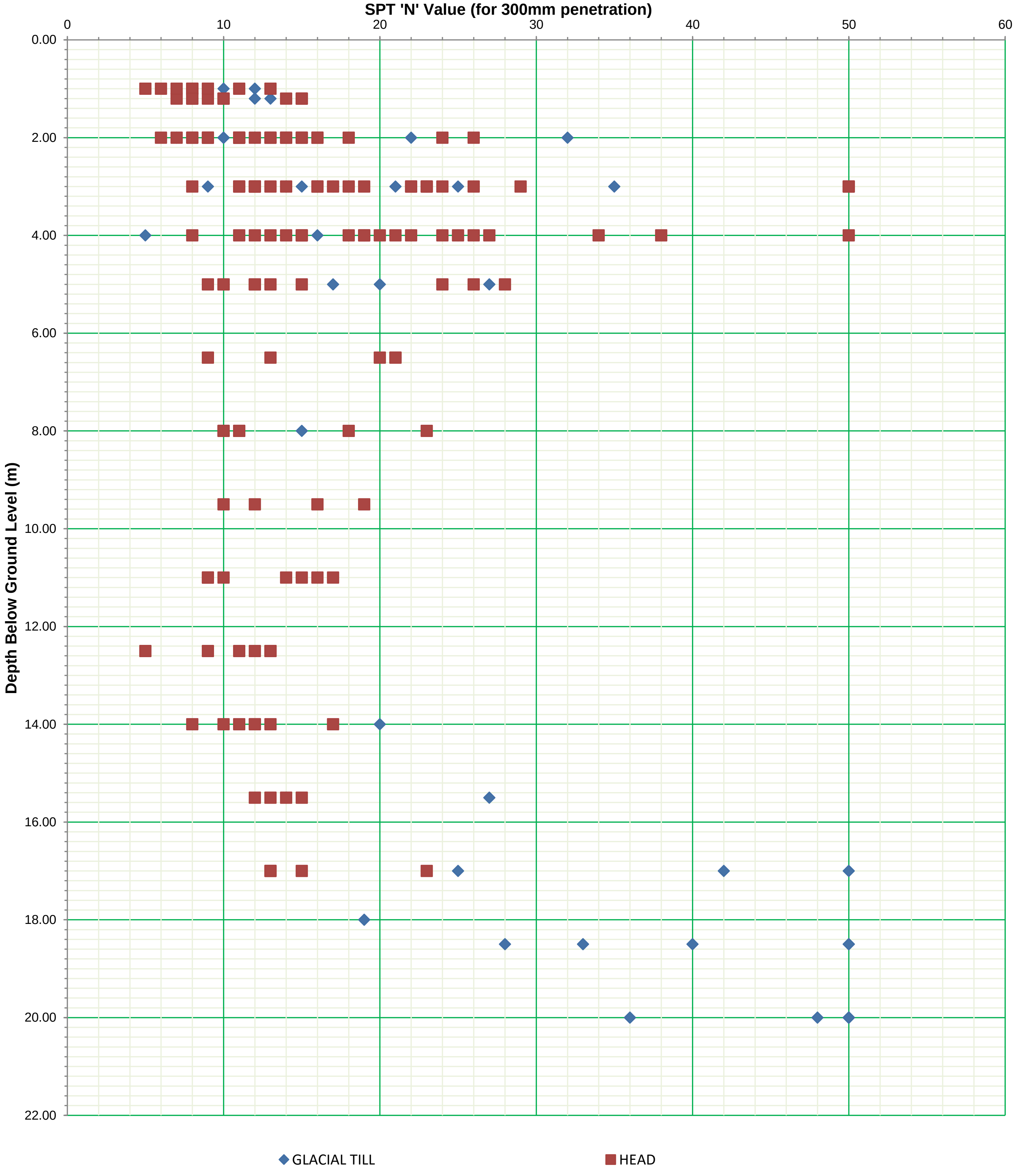
Site: Garth Wymott 2	**Client:** Ministry of Justice	**Contract No.**	C-19851
		All Data	



Template Version 1 Template Date 10/07/2019

SPT 'N' VALUES vs DEPTH COHESIVE NATURAL STRATA

Site: Garth Wymott 2	**Client:** Ministry of Justice	**Contract No.**	C-19851
		All Data	

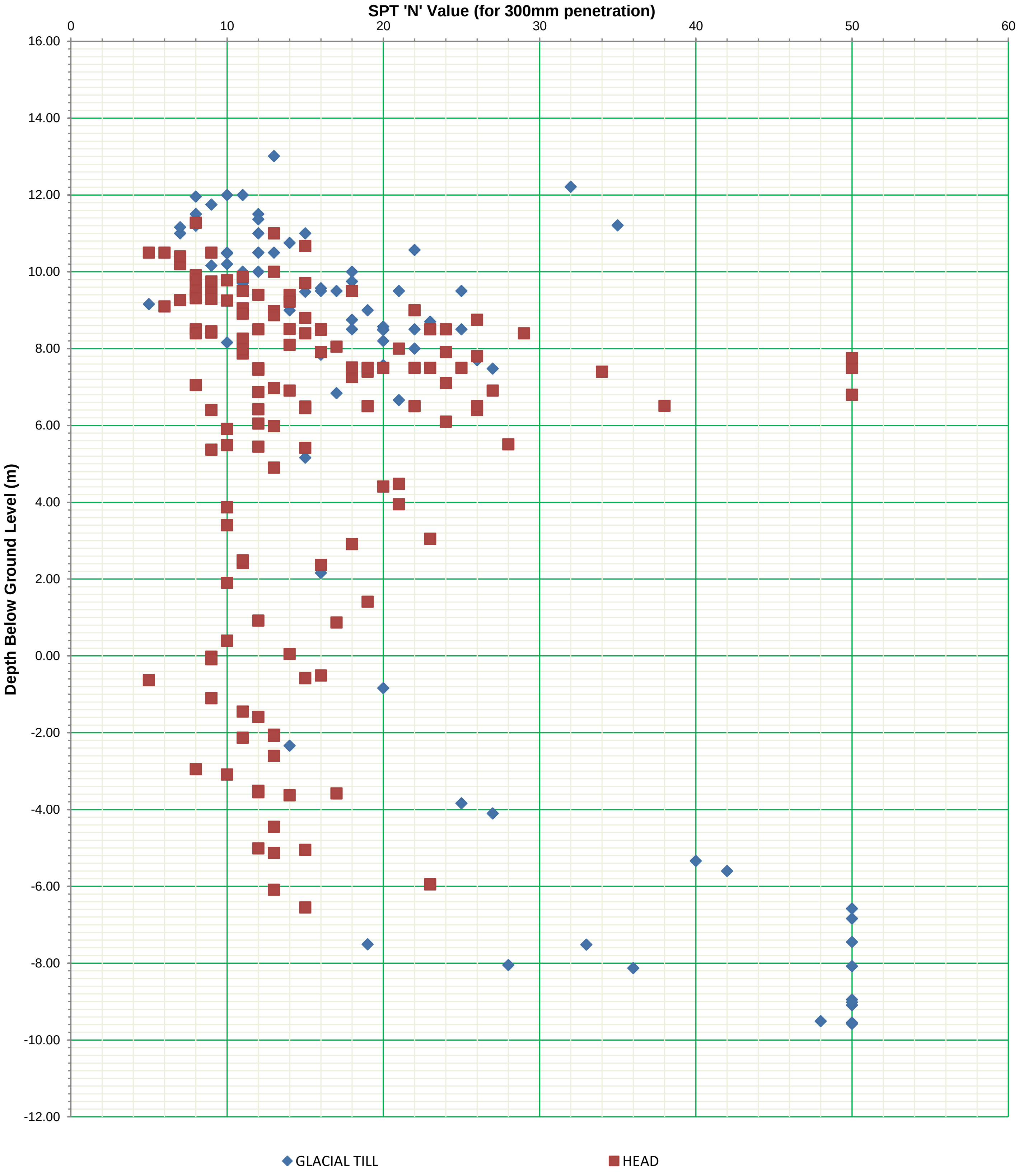


Template Version 1 Template Date 10/07/2019

Hydrock

SPT 'N' VALUES vs LEVEL
COHESIVE STRATA

Site: Garth Wymott 2	**Client:** Ministry of Justice	**Contract No.**	C-19851
		All Data	



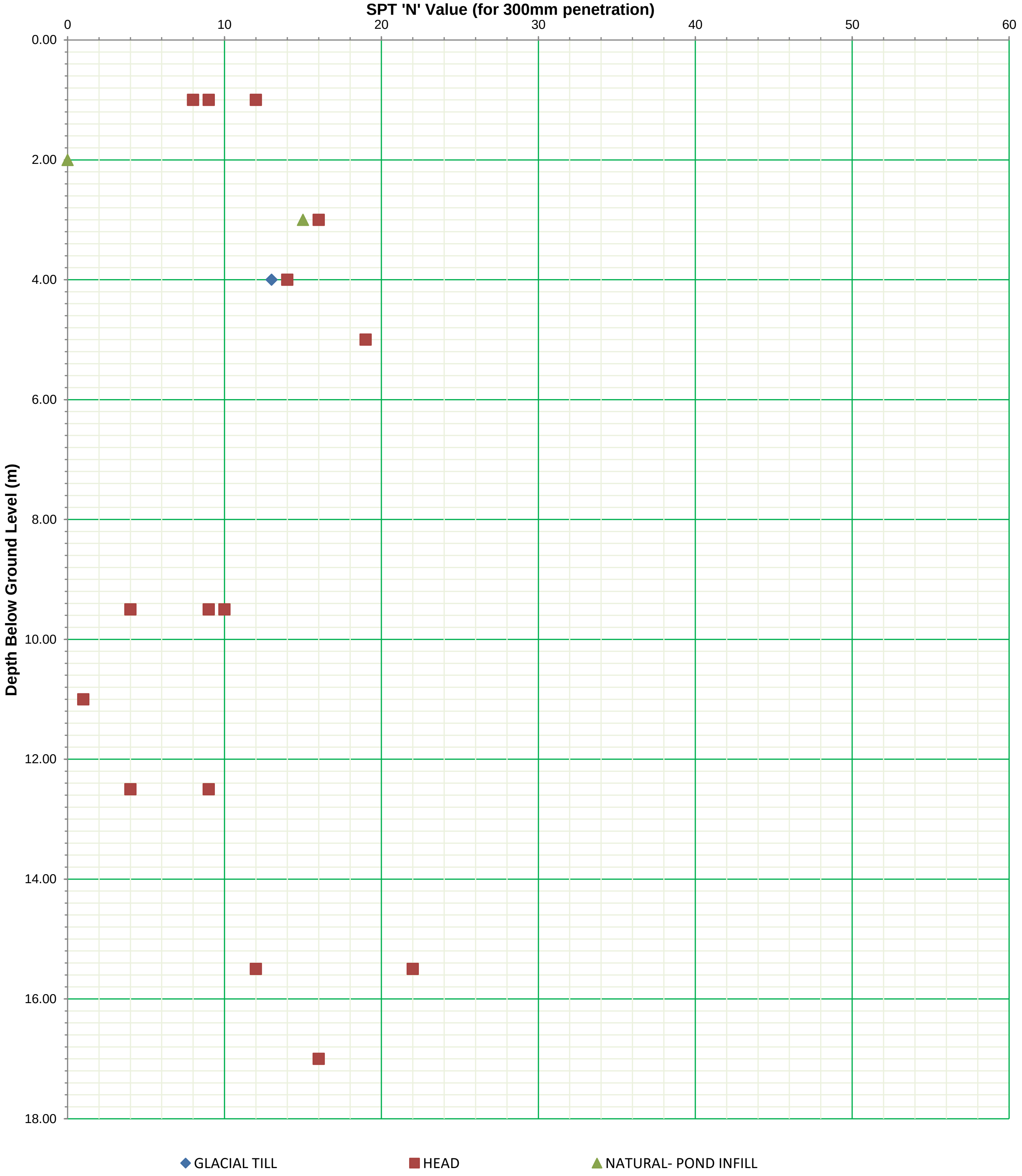
Template Version 1 Template Date 10/07/2019

SPT 'N' VALUES vs DEPTH
GRANULAR NATURAL STRATA

Site:
Garth Wymott 2

Client:
Ministry of Justice

Contract No.	C-19851
All Data	

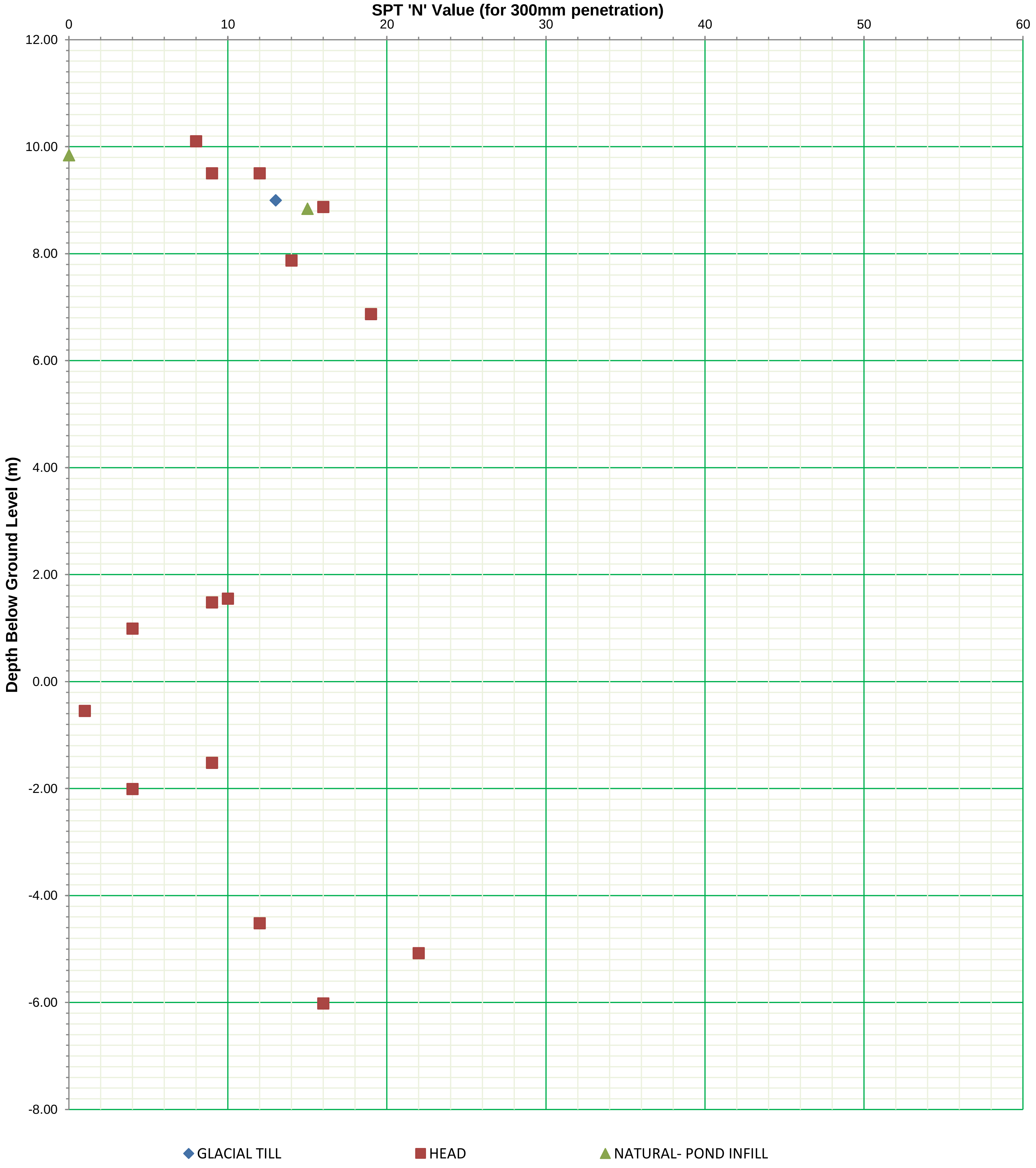


Template Version	1	Template Date	10/07/2019

Hydrock

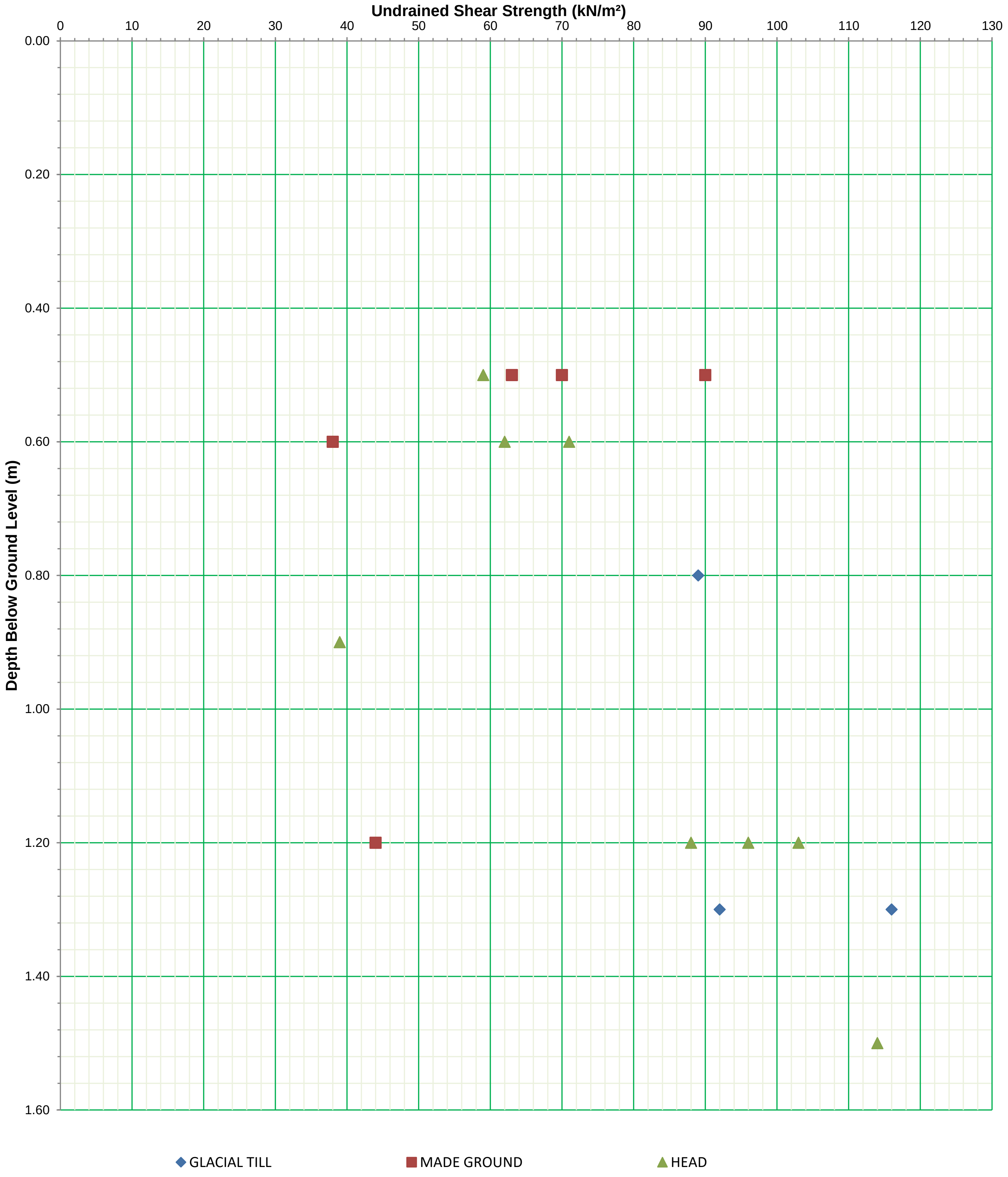
SPT 'N' VALUES vs LEVEL GRANULAR STRATA

Site:	**Client:**	**Contract No.**	C-19851
Garth Wymott 2	Ministry of Justice	All Data	



Template Version	1	Template Date	10/07/2019

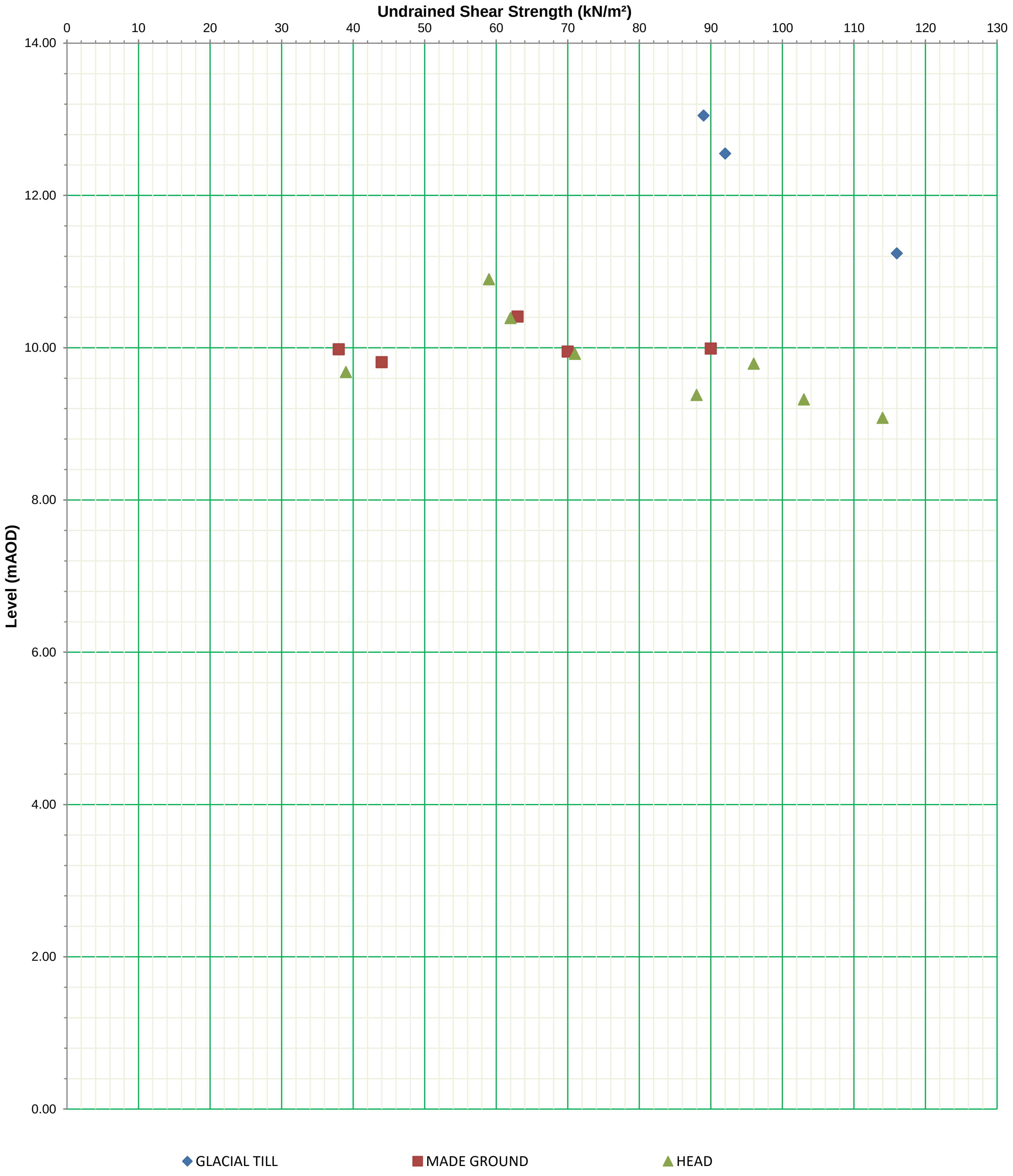
Hydrock	UNDRAINED SHEAR STRENGTH vs DEPTH		
Site: Garth Wymott 2	**Client:** Ministry of Justice	**Contract No.**	C-19851
		Hand Shear Vane	



Template Version 1 Template Date 10/07/2019

UNDRAINED SHEAR STRENGTH vs LEVEL

Site: Garth Wymott 2	**Client:** Ministry of Justice	**Contract No.**	C-19851
		Hand Shear Vane	



Template Version 1 Template Date 10/07/2019

BRE SD1 Results and Datasheets

Russel Sumner
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Analytical Report Number : 21-11464

Project / Site name:	Garth Wymott 2	**Samples received on:**	22/09/2021
Your job number:	C 19851 C	**Samples instructed on/ Analysis started on:**	22/09/2021
Your order number:	PO09538	**Analysis completed by:**	24/09/2021
Report Issue Number:	1	**Report issued on:**	24/09/2021
Samples Analysed:	1 soil sample		

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

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Analytical Report Number: 21-11464
Project / Site name: Garth Wymott 2

Lab Sample Number				2019190
Sample Reference				BH109
Sample Number				None Supplied
Depth (m)				12.50-13.00
Date Sampled				
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	18
Total mass of sample received	kg	0.001	NONE	2.0

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.6
Total Sulphate as SO4	mg/kg	50	MCERTS	2900
Total Sulphate as SO4	%	0.005	MCERTS	0.287
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.5
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1480
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	7.3
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.6
Total Sulphur	mg/kg	50	MCERTS	1200
Total Sulphur	%	0.005	MCERTS	0.122
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	0.7
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	0.07
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	3.3
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	< 5.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	190
Magnesium (leachate equivalent)	mg/l	2.5	NONE	94

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

Analytical Report Number : 21-11464
Project / Site name: Garth Wymott 2

* 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 *
2019190	BH109	None Supplied	12.50-13.00	Brown clay and loam with vegetation.

Analytical Report Number : 21-11464
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-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
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Russell Sumner
Hydrock Consultants Ltd
4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY

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e: Russellsumner@hydrock.com

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

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

Analytical Report Number : 21-11663

Project / Site name:	Garth Wymott 2	**Samples received on:**	27/08/2021
Your job number:	C-19851-C	**Samples instructed on/ Analysis started on:**	23/09/2021
Your order number:	PO09538	**Analysis completed by:**	29/09/2021
Report Issue Number:	1	**Report issued on:**	29/09/2021
Samples Analysed:	2 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

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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.

Analytical Report Number: 21-11663
Project / Site name: Garth Wymott 2

Lab Sample Number				2020207	2020208
Sample Reference				WS103	WS106
Sample Number				2	6
Depth (m)				0.50	0.80-1.00
Date Sampled				01/09/2021	01/09/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	16
Total mass of sample received	kg	0.001	NONE	0.60	0.60

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3	8.0
Total Sulphate as SO4	mg/kg	50	MCERTS	140	430
Total Sulphate as SO4	%	0.005	MCERTS	0.014	0.043
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0075	0.010
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	7.5	10.1
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	1.2	4.2
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	0.6	2.1
Total Sulphur	mg/kg	50	MCERTS	98	230
Total Sulphur	%	0.005	MCERTS	0.010	0.023
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	< 0.5	< 0.5
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	5.8	32
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	< 5.0	16

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	8.1	9.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	4.0	4.5

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

Analytical Report Number : 21-11663
Project / Site name: Garth Wymott 2

* 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 *
2020207	WS103	2	0.5	Brown clay and loam with gravel and vegetation.
2020208	WS106	6	0.80-1.00	Brown clay and loam with gravel and vegetation.

Analytical Report Number : 21-11663
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-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
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Analytical Report Number : 21-98783

Project / Site name:	Garth Wymott 2	**Samples received on:**	07/09/2021
Your job number:	C 19851 C	**Samples instructed on/ Analysis started on:**	09/09/2021
Your order number:	PO09538	**Analysis completed by:**	16/09/2021
Report Issue Number:	1	**Report issued on:**	16/09/2021
Samples Analysed:	3 soil samples		

Signed: Izabela Wójcik

Izabela Wójcik
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.

Analytical Report Number: 21-98783
Project / Site name: Garth Wymott 2

Lab Sample Number				2007448	2007449	2007450
Sample Reference				BH106	BH107a	WS103
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				24.00	5.00-5.45	1.20-2.00
Date Sampled						
Time Taken				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
Moisture Content	%	0.01	NONE	7.4	11	14
Total mass of sample received	kg	0.001	NONE	1.1	0.70	0.70

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.7	8.7	8.6
Total Sulphate as SO4	mg/kg	50	MCERTS	730	350	320
Total Sulphate as SO4	%	0.005	MCERTS	0.073	0.035	0.032
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.12	0.045	0.042
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	122	44.8	42.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	6.8	7.6	2.9
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.4	3.8	1.4
Total Sulphur	mg/kg	50	MCERTS	240	600	130
Total Sulphur	%	0.005	MCERTS	0.024	0.060	0.013
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	< 0.5	38	< 0.5
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	3.78	< 0.05
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	2.1	< 2.0	3.1
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	11	7.9	16
Magnesium (leachate equivalent)	mg/l	2.5	NONE	5.7	3.9	8.0

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

Analytical Report Number : 21-98783
Project / Site name: Garth Wymott 2

* 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 *
2007448	BH106	None Supplied	24	Brown clay and sand.
2007449	BH107a	None Supplied	5.00-5.45	Brown clay.
2007450	WS103	None Supplied	1.20-2.00	Brown clay.

Analytical Report Number : 21-98783
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-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
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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Sulphate, water soluble, in soil	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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Client
MINISTRY OF JUSTICE
Project
GARTH WYMOTT 2
Job number
C-19851

Location or material to which this assessment applies
MADE GROUND

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	3	3	3
No. tests in 20% data set	1	1	1
No. tests with suspected pyrite		1	
Maximum value	168.1	0.4	10
Mean of highest two values	91	0	7
Mean of highest 20%			
Characteristic Value	**168.1**	**0.4**	**10**
			Mg not required

	[no pyrite]	[pyrite suspected]
DS Class	**DS-1**	**DS-2**

If pyrite suspected, DS Class limited to **DS-2**

Is pyrite assumed to be present? No **Adopted DS Class = DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value **(Maximum Level)**	0	0 **Mg not required**
DS Class		

pH data

	Soil	Water
Number of tests	3	0
No. tests in 20% data set	1	
Lowest pH	8.0	
Mean of lowest 20%	8.0	
Characteristic value	**8.0**	
Design value	**8.0**	

Number of soil pH results less than 5.5 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Brownfield
Mobile groundwater **AC-1**

Client
MINISTRY OF JUSTICE
Project
GARTH WYMOTT 2
Job number
C-19851

Location or material to which this assessment applies
HEAD

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	4	4	4
No. tests in 20% data set	1	1	1
No. tests with suspected pyrite		0	
Maximum value	1484.86	0.4	94
Mean of highest two values	767	0	52
Mean of highest 20%			
Characteristic Value	**1484.86**	**0.4**	**94**

	[no pyrite]	[pyrite suspected]
DS Class	**DS-2**	**DS-2**

If pyrite suspected, DS Class limited to **DS-2**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-2**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value **(Maximum Level)**	0	0

DS Class

pH data

	Soil	Water
Number of tests	4	0
No. tests in 20% data set	1	
Lowest pH	7.6	
Mean of lowest 20%	7.6	
Characteristic value	**7.6**	

Design value **7.6**

Number of soil pH results less than 5.5 0

DS Class design value

Based on higher of soil and water data **DS-2**

ACEC Class design value

Natural ground
Mobile groundwater **AC-2**

Client
MINISTRY OF JUSTICE
Project
GARTH WYMOTT 2
Job number
C-19851

Location or material to which this assessment applies
SINGLETON MUDSTONE MEMBER

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	1	1	1
No. tests in 20% data set	0	0	0
No. tests with suspected pyrite		0	
Maximum value	126.59	0.1	5.7
Mean of highest two values	127	0	6
Mean of highest 20%			
Characteristic Value	**126.59**	**0.1**	**5.7**

	[no pyrite]	[pyrite suspected]
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value **(Maximum Level)**	0	0
DS Class		

pH data

	Soil	Water
Number of tests	1	0
No. tests in 20% data set	0	
Lowest pH	8.7	
Mean of lowest 20%		
Characteristic value	**8.7**	
Design value	**8.7**	

Number of soil pH results less than 5.5 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground
Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Appendix D Site Monitoring Data and Ground Gas Risk Assessment

Site Monitoring Data

Site: Garth Wymott 2
Job number: C-19851-C
Client: Ministry of Justice

Gas analyser: GA5000
Equipment check OK: Y
Service in date: Y
Calibration check OK: Y
Name of person monitoring: See Notes.

Notes on site conditions:

Date	Operator	Weather Conditions
13/11/2020	E3P	Unknown
01/12/2020	E3P	Unknown
06/10/2021	RS	Sunny and Mild
02/11/2021	RS	Heavy Rain and Overcast
21/01/2022	RC	Mild and Winy
11/02/2022	RS	Overcast and Mild
04/03/2022	AC	Sunny, clear skies
08/03/2022	AC	Sunny, clear skies

Notes: LEL = lower explosive limit = 5%v/v. * where the flow is less than the limit of detection of the instrument, the detection limit is reported (Highlighted in **blue**). GSVs are rounded to 3 places.

Monitoring round		Borehole details					Pressure and flow					Gas concentrations											GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Other Gases		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
													Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	CO (PPM)	H_2S (PPM)			
							Max. individual values:				**17.6**			**4.6**		**92.0**		**10.1**		**21.6**			**0.186**	**1.240**	
							Min. individual values:				0.1			0.1		2.0		0.1		0.5			0.000	0.000	**Summary statistics for this monitoring period.**
							Worst-case GSVs based on max. individual flow and max. individual conc. over the duration of this table:																**0.8096**	**1.7776**	
13/11/20	-	WS108E	S	4.00	2.82		1006	R	NR	0.1	0.1	NR	0.1	0.1	2	2	6.9	6.9	10.6	10.6	NR	NR	0.000	0.007	
13/11/20	-	WS109E	S	4.00	0.41		1004	R	NR	0.1	0.1	NR	0.1	0.1	2	2	7.7	7.7	11.7	11.7	NR	NR	0.000	0.008	Borehole flooded above response zone
13/11/20	-	WS112E	S	4.00	0.40		1006	R	NR	0.1	0.1	NR	0.1	0.1	2	2	5.7	5.7	12.1	12.1	NR	NR	0.000	0.006	Borehole flooded above response zone
01/12/20	-	WS102E	S	4.00	0.65		1028	R	NR	0.1	0.1	NR	0.1	0.1	2	2	6.7	6.7	8.7	8.7	NR	NR	0.000	0.007	
01/12/20	-	WS108E	S	4.00	3.38		1029	R	NR	0.1	0.1	NR	0.1	0.1	2	2	0.6	0.6	19.1	19.1	NR	NR	0.000	0.001	
01/12/20	-	WS109E	S	4.00	0.42		1030	R	NR	0.1	0.1	NR	0.1	0.1	2	2	8.6	8.6	9.5	9.5	NR	NR	0.000	0.009	Borehole flooded above response zone
01/12/20	-	WS112E	S	4.00	0.42		1029	R	NR	0.1	0.1	NR	0.1	0.1	2	2	5.8	5.8	12.3	12.3	NR	NR	0.000	0.006	Borehole flooded above response zone
06/10/21	AM	BH106	S	25.60	2.16		1017	R	1.40	15.5	15.5	NR	0.1	0.1	2	2	0.6	0.6	20.3	14.5	4.0	<1	0.016	0.093	
06/10/21	AM	BH109	S	13.40	2.54		1018	R	0.65	11.0	11.0	NR	0.2	0.2	4	4	2.0	2.2	20.6	15.8	<1	<1	0.022	0.242	
06/10/21	AM	WS104	S	2.50	0.80		1018	R	0.04	9.3	9.3	NR	0.1	0.1	2	2	1.9	2.0	20.4	18.8	4.0	<1	0.009	0.186	
06/10/21	AM	WS102	S	3.10	1.08		1018	R	-0.02	0.1	0.1	NR	0.1	0.1	2	2	6.6	6.7	14.4	6.2	<1	<1	0.000	0.007	
06/10/21	AM	BH105	S	20.00	1.60		1019	R	13.84	9.7	9.7	NR	0.1	0.1	2	2	8.1	8.2	8.2	5.9	8.0	<1	0.010	0.795	
06/10/21	AM	BH108	S	11.65	3.93		1019	R	0.04	0.1	0.1	NR	0.1	0.1	2	2	2.6	2.7	18.1	13.5	<1	<1	0.000	0.003	
06/10/21	PM	BH101	S	19.10	2.23		1019	R	-19.00	8.6	8.6	NR	0.1	0.1	2	2	0.4	0.3	20.8	20.8	6.0	<1	0.009	0.026	
06/10/21	PM	BH103	S	16.75	2.90		1019	R	-0.09	2.5	2.5	NR	0.1	0.1	2	2	0.8	0.7	20.1	18.9	2.0	<1	0.003	0.018	
06/10/21	PM	BH107A	S	14.10	3.40		1019	R	0.23	5.5	5.5	NR	0.1	0.1	2	2	1.7	1.7	20.5	16.9	6.0	<1	0.006	0.094	
06/10/21	PM	WS103	S	-	-		1019	R	0.42	0.1	0.1	NR	0.1	0.1	2	2	1.1	1.3	19.2	17.0	2.0	<1	0.000	0.001	Unable to remove bung- install damaged by farm vehicle
02/11/21	AM	BH106	S	25.50	1.77		996	R	-1.80	17.6	17.6	NR	0.1	0.1	2	2	0.1	0.1	21.5	21.4	<1	<1	0.018	0.018	
02/11/21	AM	WS104	S	2.80	0.53		996	R	2.78	6.5	6.5	NR	0.2	0.1	4	2	1.3	1.3	21.3	20.7	<1	<1	0.007	0.085	
02/11/21	AM	WS102	S	3.08	0.45		997	R	-17.50	0.1	0.1	NR	0.2	0.2	4	4	7.3	7.5	17.1	3.9	<1	<1	0.000	0.008	
02/11/21	AM	BH105	S	20.00	2.18		997	R	-1.14	6.1	6.1	NR	0.1	0.1	2	2	6.7	6.8	17.8	0.5	2.0	<1	0.006	0.415	
02/11/21	AM	BH108	S	11.42	3.69		997	R	0.39	3.8	3.8	NR	0.1	0.1	2	2	4.1	4.5	8.3	5.8	<1	<1	0.004	0.171	
02/11/21	AM	BH101	S	19.18	2.15		997	R	0.02	0.1	0.1	NR	0.1	0.1	2	2	0.1	0.1	21.6	21.6	<1	<1	0.000	0.000	
02/11/21	AM	BH103	S	16.58	2.75		997	R	4.38	3.8	3.8	NR	0.1	0.1	2	2	0.9	0.9	21.0	20.2	<1	<1	0.004	0.034	

Monitoring round		Borehole details					Pressure and flow					Gas concentrations											GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	VOC (as ppm using PID)	CH$_4$ (%v/v)		CH$_4$ (%LEL)		CO$_2$ (%v/v)		O$_2$ (%v/v)		Other Gases		Gas Screening Value (CH$_4$) (l/hr)	Gas Screening Value (CO$_2$) (l/hr)	Notes on condition of borehole and surrounding ground
													Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	CO (PPM)	H$_2$S (PPM)			
02/11/21	AM	BH107A	S	14.00	3.36		997	R	39.99	4.1	4.1	NR	0.3	0.2	6	4	2.1	2.0	19.5	13.2	2.0	<1	0.008	0.082	
21/01/22	AM	WS104	S	2.79	0.52		1038	F	-8.92	2.4	2.4	NR	4.6	4.6	92	92	2.8	2.8	4.6	4.6	2	<1	0.110	0.067	
21/01/22	AM	BH106	S	25.55	1.95		1038	F	-1.51	0.1	0.1	NR	0.1	0.1	2	2	0.7	0.7	19.7	19.7	<1	<1	0.000	0.001	
21/01/22	AM	BH105	S	19.87	2.35		1038	F	46.55	0.1	0.1	NR	0.2	0.2	4	4	4.3	4.3	20.7	20.7	26	<1	0.000	0.004	
21/01/22	AM	BH103	S	16.52	2.59		1038	F	-12.26	13.4	13.4	NR	0.1	0.1	2	2	6.7	6.7	2.6	2.6	2	<1	0.013	0.898	
21/01/22	AM	WS102	S	19.98	2.39		1038	F	7.25	0.1	0.1	NR	0.1	0.1	2	2	2.5	2.5	9.4	9.4	<1	<1	0.000	0.003	
21/01/22	AM	BH101	S	19.05	1.94		1038	F	-10.67	2.4	2.4	NR	0.1	0.1	2	2	1.1	0.6	18.8	19.8	3	<1	0.002	0.014	
21/01/22	AM	BH107A	S	14.22	3.28		1038	F	72.49	0.1	0.1	NR	0.1	0.1	2	2	9.3	9.2	2.2	2.2	<1	<1	0.000	0.009	
21/01/22	AM	BH108	S	11.43	3.67		1038	F	-1.52	5.9	5.9	NR	0.1	0.1	2	2	6.4	6.3	1.6	1.6	2	<1	0.006	0.372	
															NR										
11/02/22	AM	BH106	S	25.38	1.67		1030	R	-3.98	7.8	7.4	NR	0.1	0.1	2	2	2.1	2.3	20.2	17.6	2	<1	0.008	0.179	
11/02/22	AM	WS104	S	2.78	0.40		1030	R	0.72	0.1	0.1	NR	0.1	0.1	2	2	0.6	0.1	20.6	20.9	<1	<1	0.000	0.000	
11/02/22	AM	WS102	S	3.10	0.57		1031	R	8.95	0.1	0.1	NR	0.1	0.1	2	2	5.2	5.3	18.4	5.4	<1	<1	0.000	0.005	
11/02/22	AM	BH105	S	19.80	1.96		1031	R	-3.89	3.5	9.3	NR	0.1	0.1	2	2	2.9	3.5	18.0	6.4	3	<1	0.004	0.123	
11/02/22	AM	BH108	S	11.40	3.61		1031	R	0.05	1.9	5.1	NR	0.1	0.1	2	2	6.0	5.9	16.2	3.9	<1	<1	0.002	0.112	
11/02/22	AM	BH101	S	19.00	2.00		1031	R	-2.85	0.1	0.1	NR	0.1	0.1	2	2	0.2	0.2	20.0	20.2	<1	<1	0.000	0.000	
11/02/22	AM	BH103	S	16.53	2.50		1031	R	-5.97	2.2	8.0	NR	0.1	0.1	2	2	6.2	6.4	14.5	5.4	3	<1	0.002	0.141	
11/02/22	AM	BH107A	S	14.03	3.11		1031	R	14.10	1.7	4.1	NR	0.1	0.1	2	2	9.7	9.8	9.1	1.1	<1	<1	0.002	0.167	
04/03/22	AM	WS102	S	3.11	0.46		996	F	13.78	4.9	4.9	NR	3.8	3.8	76	76	1.7	1.7	19.8	19.8	<1	<1	0.186	0.083	
04/03/22	AM	BH108	S	11.45	3.62		996	F	12.98	0.1	0.1	NR	0.1	0.1	2	2	5.7	5.7	6.1	6.1	<1	<1	0.000	0.006	
04/03/22	AM	BH106	S	25.33	1.70		997	F	14.33	1.8	1.8	NR	0.1	0.1	2	2	2.3	2.3	18.7	18.7	<1	<1	0.002	0.041	
04/03/22	AM	WS104	S	2.80	0.24		997	F	14.45	8.8	8.8	NR	0.1	0.1	2	2	6.8	6.8	19.3	19.3	3	<1	0.009	0.598	
04/03/22	AM	BH101	S	19.02	1.88		997	F	13.93	0.3	0.3	NR	0.1	0.1	2	2	0.5	0.2	20.4	21.4	3	<1	0.000	0.001	
04/03/22	AM	BH103	S	16.54	2.50		997	F	14.16	0.1	0.1	NR	0.1	0.1	2	2	7.6	7.6	5.0	5.0	<1	<1	0.000	0.008	
04/03/22	AM	BH105	S	19.79	2.04		997	F	14.85	7.3	7.3	NR	0.1	0.1	2	2	4.0	4.0	1.9	1.9	<1	<1	0.007	0.292	
04/03/22	AM	BH107A	S	14.03	3.80		997	F	14.35	12.4	12.4	NR	0.1	0.1	2	2	10.0	10.0	0.6	0.6	<1	<1	0.012	1.240	
08/03/22	AM	BH106	S	25.39	1.74		1009	F	14.38	2.5	2.5	NR	0.1	0.1	2	2	1.7	1.7	19.4	19.4	<1	<1	0.003	0.043	
08/03/22	AM	WS104	S	2.79	0.38		1009	F	-0.43	0.1	0.1	NR	0.1	0.1	2	2	0.2	0.2	21.2	21.2	<1	<1	0.000	0.000	
08/03/22	AM	WS102	S	3.11	0.71		1009	F	14.19	0.1	0.1	NR	1.4	1.4	28	28	0.9	0.9	20.4	20.4	<1	<1	0.001	0.001	
08/03/22	AM	BH108	S	11.45	3.53		1009	F	13.92	0.1	0.1	NR	0.1	0.1	2	2	5.1	5.1	7.7	7.7	<1	<1	0.000	0.005	
08/03/22	AM	BH105	S	19.79	2.01		1009	F	13.00	3.1	3.1	NR	0.1	0.1	2	2	4.2	4.2	2.6	2.6	<1	<1	0.003	0.130	
08/03/22	AM	BH101	S	18.97	1.95		1009	F	13.54	0.1	0.1	NR	0.1	0.1	2	2	0.4	0.4	20.2	20.1	3	<1	0.000	0.000	
08/03/22	AM	BH103	S	16.50	2.50		1009	F	13.38	2.2	2.2	NR	0.1	0.1	2	2	6.3	6.3	8.8	8.8	<1	<1	0.002	0.139	
08/03/22	AM	BH107A	S	14.03	3.01		1009	F	13.74	5.3	5.3	NR	0.1	0.1	2	2	10.1	10.1	3.1	3.1	<1	<1	0.005	0.535	

Ground Gas Risk Assessment

Ground Gas Risk Assessment

Job Number C-19851
Job Name Garth Wymott 2
Client Ministry of Justice

Data All Data

Max CH4	Max C02	Worst Case Flow	Worst Case GSV Methane	Worst Case GSV CO_2
4.6	8.2	9.7	0.4462	0.7954

Number of Readings	57
Number of Monitoring Rounds	8
Number of Readings with Flow Rate	57

NHBC Assessment

	Methane		Carbon Dioxide	
	Max Value	GSV	Max Value	GSV
Green	54	56	33	54
Amber 1	3	1	23	3
Amber 2	0	0	1	0
Red	0	0	0	0

CIRIA C665 Assessment

	Methane		Carbon Dioxide	
	Max Value	GSV	Max Value	GSV
CS1	0.2	0.02	4.5	0.598
CS2	3.8	0.1862	10.0	0.898
CS3	N/A	0	N/A	0
CS4	N/A	0	N/A	0
CS5	N/A	0	N/A	0
CS6	N/A	0	N/A	0

Location	Pressure Trend	Date	Relative Pressure (mb)	Flow Rate (l/hr)	Atmos. Pressure (m.bar)	CH_4 (% vol)		(%LEL)		CO_2 (% vol)		O_2 (% vol)		GSV – CH4	GSV – CO_2
						Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady		
BH101	R	06/10/21	-19.00	8.6	1019	0.1	0.1	2.0	2.0	0.4	0.3	20.8	20.8	0.0086	0.0258
BH103	R	06/10/21	-0.09	2.5	1019	0.1	0.1	2.0	2.0	0.8	0.7	20.1	18.9	0.0025	0.0175
BH105	R	06/10/21	13.84	9.7	1019	0.1	0.1	2.0	2.0	8.1	8.2	8.2	5.9	0.0097	0.7954
BH106	R	06/10/21	1.40	15.5	1017	0.1	0.1	2.0	2.0	0.6	0.6	20.3	14.5	0.0155	0.0930
BH107A	R	06/10/21	0.23	5.5	1019	0.1	0.1	2.0	2.0	1.7	1.7	20.5	16.9	0.0055	0.0935
BH108	R	06/10/21	0.04	0.1	1019	0.1	0.1	2.0	2.0	2.6	2.7	18.1	13.5	0.0001	0.0027
BH109	R	06/10/21	0.65	11.0	1018	0.2	0.2	4.0	4.0	2.0	2.2	20.6	15.8	0.0220	0.2420
WS102	R	06/10/21	-0.02	0.1	1018	0.1	0.1	2.0	2.0	6.6	6.7	14.4	6.2	0.0001	0.0067
WS103	R	06/10/21	0.42	0.1	1019	0.1	0.1	2.0	2.0	1.1	1.3	19.2	17.0	0.0001	0.0013
WS104	R	06/10/21	0.04	9.3	1018	0.1	0.1	2.0	2.0	1.9	2.0	20.4	18.8	0.0093	0.1860
WS108E	R	13/11/20	NR	0.1	1006	0.1	0.1	2.0	2.0	6.9	6.9	10.6	10.6	0.0001	0.0069
WS109E	R	13/11/20	NR	0.1	1004	0.1	0.1	2.0	2.0	7.7	7.7	11.7	11.7	0.0001	0.0077
WS112E	R	13/11/20	NR	0.1	1006	0.1	0.1	2.0	2.0	5.7	5.7	12.1	12.1	0.0001	0.0057
WS102E	R	01/12/20	NR	0.1	1028	0.1	0.1	2.0	2.0	6.7	6.7	8.7	8.7	0.0001	0.0067
WS108E	R	01/12/20	NR	0.1	1029	0.1	0.1	2.0	2.0	0.6	0.6	19.1	19.1	0.0001	0.0006
WS109E	R	01/12/20	NR	0.1	1030	0.1	0.1	2.0	2.0	8.6	8.6	9.5	9.5	0.0001	0.0086
WS112E	R	01/12/20	NR	0.1	1029	0.1	0.1	2.0	2.0	5.8	5.8	12.3	12.3	0.0001	0.0058
BH106	R	02/11/21	-1.80	0.1	996	0.1	0.1	2.0	2.0	0.1	0.1	21.5	21.4	0.0001	0.0001
WS104	R	02/11/21	2.78	0.1	996	0.2	0.1	4.0	2.0	1.3	1.3	21.3	20.7	0.0001	0.0013
WS102	R	02/11/21	-17.50	0.2	997	0.2	0.2	4.0	4.0	7.3	7.5	17.1	3.9	0.0004	0.0150
BH105	R	02/11/21	-1.14	0.1	997	0.1	0.1	2.0	2.0	6.7	6.8	17.8	0.5	0.0001	0.0068
BH108	R	02/11/21	0.39	0.1	997	0.1	0.1	2.0	2.0	4.1	4.5	8.3	5.8	0.0001	0.0045
BH101	R	02/11/21	0.02	0.1	997	0.1	0.1	2.0	2.0	0.1	0.1	21.6	21.6	0.0001	0.0001
BH103	R	02/11/21	4.38	0.1	997	0.1	0.1	2.0	2.0	0.9	0.9	21.0	20.2	0.0001	0.0009
BH107A	R	02/11/21	39.99	0.2	997	0.3	0.2	6.0	4.0	2.1	2.0	19.5	13.2	0.0004	0.0040
WS104	F	21/01/22	-8.92	2.4	1038	4.6	4.6	92.0	92.0	2.8	2.8	4.6	4.6	0.1104	0.0672
BH106	F	21/01/22	-1.51	0.1	1038	0.1	0.1	2.0	2.0	0.7	0.7	19.7	19.7	0.0001	0.0007
BH105	F	21/01/22	46.55	0.1	1038	0.2	0.2	4.0	4.0	4.3	4.3	20.7	20.7	0.0002	0.0043
BH103	F	21/01/22	-12.26	13.4	1038	0.1	0.1	2.0	2.0	6.7	6.7	2.6	2.6	0.0134	0.8978
WS102	F	21/01/22	7.25	0.1	1038	0.1	0.1	2.0	2.0	2.5	2.5	9.4	9.4	0.0001	0.0025
BH101	F	21/01/22	-10.67	2.4	1038	0.1	0.1	2.0	2.0	1.1	0.6	18.8	19.8	0.0024	0.0144
BH107A	F	21/01/22	72.49	0.1	1038	0.1	0.1	2.0	2.0	9.3	9.2	2.2	2.2	0.0001	0.0092
BH108	F	21/01/22	-1.52	5.9	1038	0.1	0.1	2.0	2.0	6.4	6.3	1.6	1.6	0.0059	0.3717
BH106	R	11/02/22	-3.98	7.4	1030	0.1	0.1	2.0	2.0	2.1	2.3	20.2	17.6	0.0074	0.1702
WS104	R	11/02/22	0.72	0.1	1030	0.1	0.1	2.0	2.0	0.6	0.1	20.6	20.9	0.0001	0.0001
WS102	R	11/02/22	8.95	0.1	1031	0.1	0.1	2.0	2.0	5.2	5.3	18.4	5.4	0.0001	0.0053
BH105	R	11/02/22	-3.89	9.3	1031	0.1	0.1	2.0	2.0	2.9	3.5	18.0	6.4	0.0093	0.3255
BH108	R	11/02/22	0.05	5.1	1031	0.1	0.1	2.0	2.0	6.0	5.9	16.2	3.9	0.0051	0.3009
BH101	R	11/02/22	-2.85	0.1	1031	0.1	0.1	2.0	2.0	0.2	0.2	20.0	20.2	0.0001	0.0002
BH103	R	11/02/22	-5.97	8.0	1031	0.1	0.1	2.0	2.0	6.2	6.4	14.5	5.4	0.0080	0.5120
BH107A	R	11/02/22	14.10	4.1	1031	0.1	0.1	2.0	2.0	9.7	9.8	9.1	1.1	0.0041	0.4018
WS102	F	04/03/22	13.78	4.9	996	3.8	3.8	76.0	76.0	1.7	1.7	19.8	19.8	0.1862	0.0833
BH108	F	04/03/22	12.98	0.1	996	0.1	0.1	2.0	2.0	5.7	5.7	6.1	6.1	0.0001	0.0057
BH106	F	04/03/22	14.33	1.8	997	0.1	0.1	2.0	2.0	2.3	2.3	18.7	18.7	0.0018	0.0414
WS104	F	04/03/22	14.45	8.8	997	0.1	0.1	2.0	2.0	6.8	6.8	19.3	19.3	0.0088	0.5984
BH101	F	04/03/22	13.93	0.3	997	0.1	0.1	2.0	2.0	0.5	0.2	20.4	21.4	0.0003	0.0006
BH103	F	04/03/22	14.16	0.1	997	0.1	0.1	2.0	2.0	7.6	7.6	5.0	5.0	0.0001	0.0076
BH105	F	04/03/22	14.85	7.3	997	0.1	0.1	2.0	2.0	4.0	4.0	1.9	1.9	0.0073	0.2920
BH107A	F	04/03/22	14.35	12.4	997	0.1	0.1	2.0	2.0	10.0	10.0	0.6	0.6	0.0124	1.2400
BH106	F	08/03/22	14.38	2.5	1009	0.1	0.1	2.0	2.0	1.7	1.7	19.4	19.4	0.0025	0.0425
WS104	F	08/03/22	-0.43	0.1	1009	0.1	0.1	2.0	2.0	0.2	0.2	21.2	21.2	0.0001	0.0002
WS102	F	08/03/22	14.19	0.1	1009	1.4	1.4	28.0	28.0	0.9	0.9	20.4	20.4	0.0014	0.0009
BH108	F	08/03/22	13.92	0.1	1009	0.1	0.1	2.0	2.0	5.1	5.1	7.7	7.7	0.0001	0.0051
BH105	F	08/03/22	13.00	3.1	1009	0.1	0.1	2.0	2.0	4.2	4.2	2.6	2.6	0.0031	0.1302
BH101	F	08/03/22	13.54	0.1	1009	0.1	0.1	2.0	2.0	0.4	0.4	20.2	20.1	0.0001	0.0004
BH103	F	08/03/22	13.38	2.2	1009	0.1	0.1	2.0	2.0	6.3	6.3	8.8	8.8	0.0022	0.1386
BH107A	F	08/03/22	13.74	5.3	1009	0.1	0.1	2.0	2.0	10.1	10.1	3.1	3.1	0.0053	0.5353

Ternary Plots

Hydrock Bulk Gases Ternary Plot Analysis

Hydrock

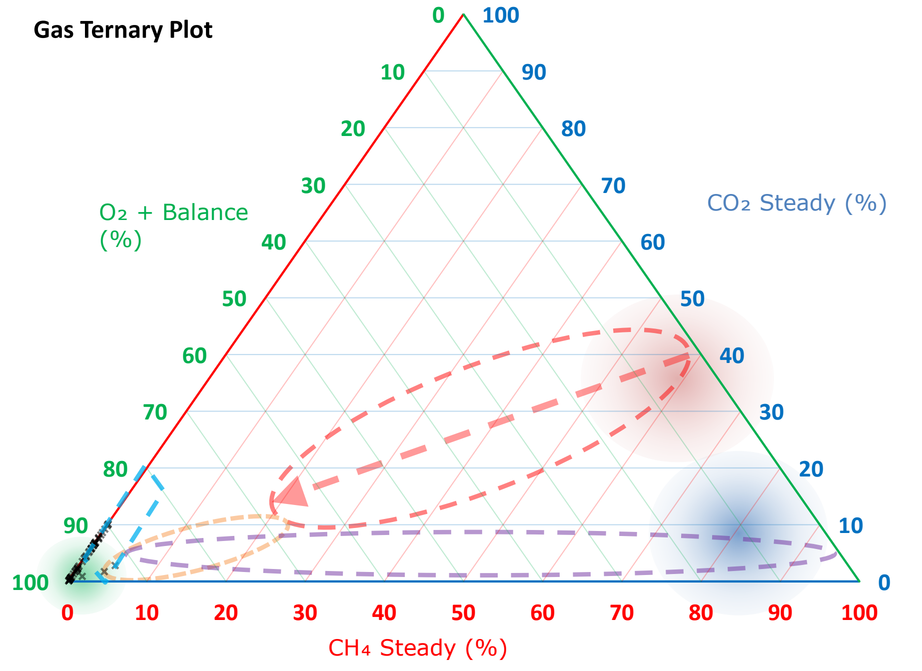
Client:	Ministry of Justice
Site Name:	Garth Wymott 2
Contract Number:	C-19851
Assessment Date:	21/04/2022

Screened Strata:	All
Site Zone:	All site

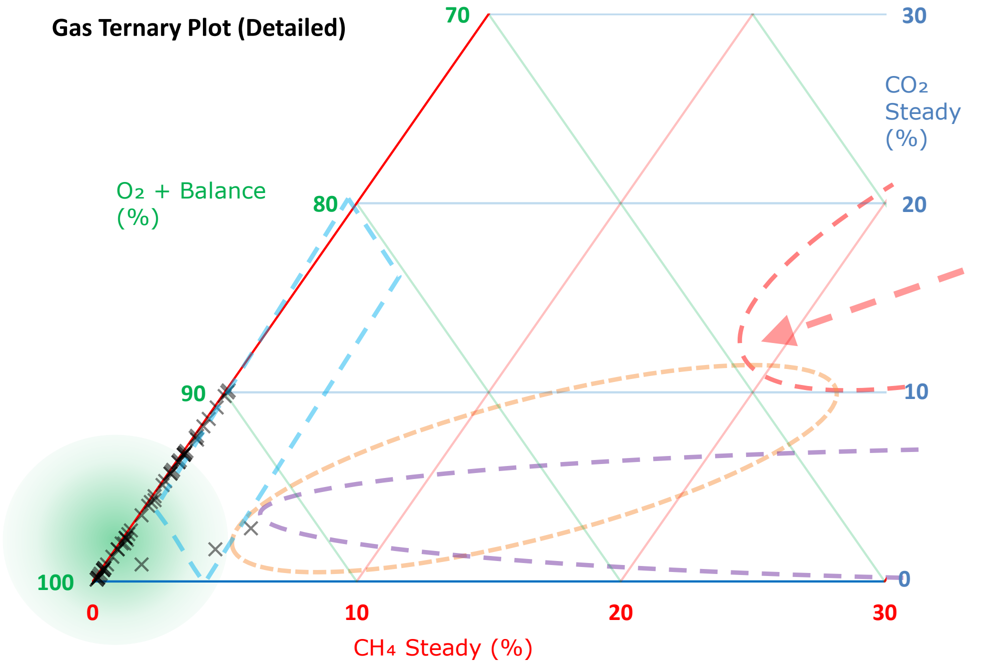
Locations

BH101	BH103	BH105	BH106	BH107A	BH108	BH109	WS102	WS102E	WS104	WS108E	WS109E	WS112E

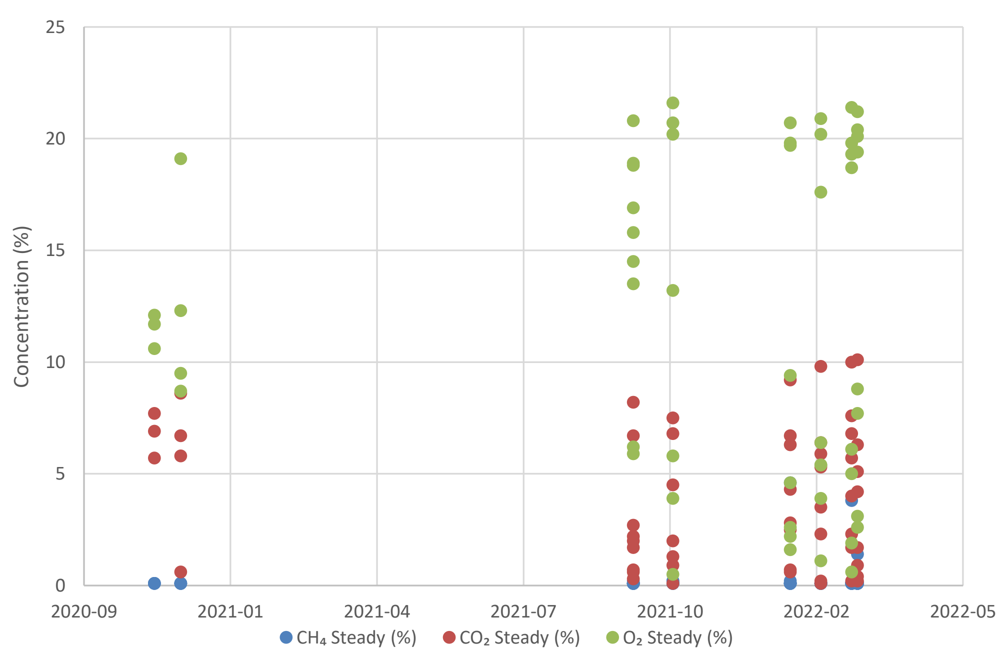
Gas Ternary Plot



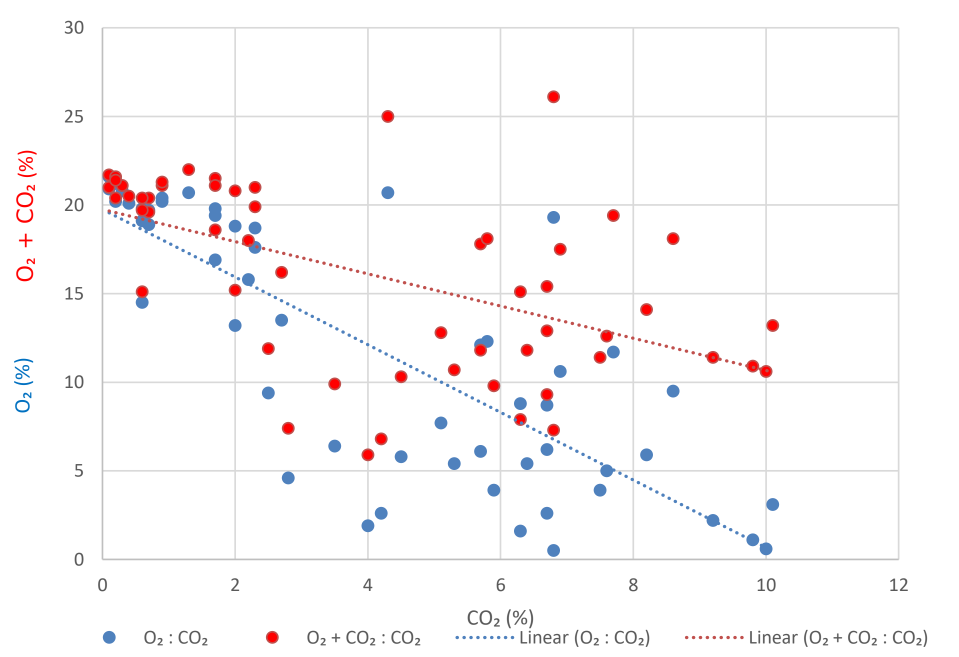
Gas Ternary Plot (Detailed)



Bulk Gases Time-Plot



CO₂ / O₂ relationship



Key:

⬭	Indicative of landfill gas migration (assuming source composition 60% methane / 40% carbon dioxide) as it displaces air from the ground. Assumes no chemical changes. Below 20% methane and 13% carbon dioxide relationship for landfill gas migration unclear. Arrow shows direction of dilution with fresh air
⬭	Microbial respiration of organic material in soil. Zero methane and low flow. (Direct consumption of oxygen to produce carbon dioxide)
⬭	Potentially indicative of methane outgassing from groundwater to borehole headspace (Hydrock dataset).
⬭	Potentially indicative of microbial degradation of LNAPL vapours in unsaturated zone. (Hydrock dataset)
●	Indicative of a landfill gas source (e.g 60% CH₄ / 40% CO₂)
●	Indicative of geogenic gas (e.g mine-workings)
●	Fresh air

Additional Notes

A direct linear downwards relationship between CO_2 and O_2 indicates depletion of oxygen to produce carbon dioxide via microbial respiration using the following equation: $CH_2O + O_2$ --> $CO_2 + H_2O$ In this scenerio CO_2 + O_2 should be around 21% (i.e. the O_2 concentration in the atmosphere)

There may also be trace amounts of methane up to about 3% caused by anaerobic decomposition in small anaerobic hotspots or the reduction of carbon dioxide by methanogens. Oxygen concentrations may be depleted but in this scenario oxygen deficient air is not likely to be emitted quickly from the ground and it does not pose a risk.

After: Wilson et al, 2018. Ground Gas Information Sheet No. 1
Hydrock datasets (methane outgassing / LNAPL vapour degradation)

Version: 1 09/07/2019

Appendix E Contamination Test Results and Statistical Analysis

Hydrock Contamination Test Results (Soils)

Russell Sumner
Hydrock Consultants Ltd
4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY

t: 01782 261919
f: 01782 262020
e: Russellsumner@hydrock.com

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

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

Analytical Report Number : 21-95239-2

Replaces Analytical Report Number: 21-95239, issue no. 1
Client references/information amended.

Project / Site name: Garth Wymott 2

Samples received on: 26/08/2021

Your job number: C19851

Samples instructed on/ Analysis started on: 26/08/2021

Your order number: PO09538

Analysis completed by: 09/09/2021

Report Issue Number: 2

Report issued on: 09/09/2021

Samples Analysed: 1 bulk sample - 8 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

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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.

Analytical Report Number: 21-95239-2
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1986193	1986194	1986195	1986196	1986197
Sample Reference				BH104	BH102	WS104	SA104	CBR118
Sample Number				None Supplied	None Supplied	1	1	1
Depth (m)				17.00-17.00	7.50-7.50	0.50-0.50	0.20-0.20	0.10-0.10
Date Sampled				23/08/2021	24/08/2021	24/08/2021	24/08/2021	24/08/2021
Time Taken				1700	1700	0900	0900	0900
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	%	0.01	NONE	21	12	18	20	6.4
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2	1.2

Asbestos in Soil	Type	N/A	ISO 17025	-	-	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.1	8.5	7.0	7.8	8.7
Free Cyanide	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1300	730	-	-	-
Total Sulphate as SO4	%	0.005	MCERTS	0.134	0.073	-	-	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.44	0.18	0.015	0.0089	0.0049
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	437	185	-	-	-
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	14	7.0	-	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	7.1	3.5	-	-	-
Total Sulphur	mg/kg	50	MCERTS	1100	560	-	-	-
Total Sulphur	%	0.005	MCERTS	0.114	0.056	-	-	-
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	1.7	1.1	-	-	-
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	0.17	0.11	-	-	-
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	-	-	0.053	0.043	0.0057
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	-	-	-	-
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	3.2	3.2	-	-	-
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.57	0.46
Anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05	1.6	0.93
Pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05	1.6	1.0
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.68	0.39
Chrysene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.72	0.46
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.68	0.51
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.55	0.30
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.52	0.45
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.47	0.31
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.61	0.45

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	< 0.80	7.93	5.28

Analytical Report Number: 21-95239-2
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1986193	1986194	1986195	1986196	1986197
Sample Reference				BH104	BH102	WS104	SA104	CBR118
Sample Number				None Supplied	None Supplied	1	1	1
Depth (m)				17.00-17.00	7.50-7.50	0.50-0.50	0.20-0.20	0.10-0.10
Date Sampled				23/08/2021	24/08/2021	24/08/2021	24/08/2021	24/08/2021
Time Taken				1700	1700	0900	0900	0900
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	12	11	9.4
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	0.89	0.82	0.30
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	0.7	< 0.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	-	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	-	-	28	24	8.1
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	29	24	8.5
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	26	55	13
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	75	68	9.6
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	28	25	6.2
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	32	28	8.2
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	73	140	16
Magnesium (water soluble)	mg/kg	5	NONE	51	29	-	-	-
Magnesium (leachate equivalent)	mg/l	2.5	NONE	26	15	-	-	-

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

Analytical Report Number: 21-95239-2
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1986198	1986199	1986200
Sample Reference				WS105	CBR115	WS105
Sample Number				1	1	9
Depth (m)				0.30-0.50	None Supplied	1.30-1.30
Date Sampled				24/08/2021	24/08/2021	24/08/2021
Time Taken				0900	0900	1700
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	28	15
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.1	7.2	8.2
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	-
Total Sulphate as SO4	mg/kg	50	MCERTS	-	-	200
Total Sulphate as SO4	%	0.005	MCERTS	-	-	0.020
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.023	0.015	0.010
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	10.3
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	-	-	3.6
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	1.8
Total Sulphur	mg/kg	50	MCERTS	-	-	100
Total Sulphur	%	0.005	MCERTS	-	-	0.010
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	-	-	< 0.5
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	< 0.05
Organic Matter	%	0.1	MCERTS	-	13	-
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.020	-	-
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	0.076	-
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	-	-	2.1
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	-	-	< 5.0

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	2.7	-

Speciated PAHs

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

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	-

Analytical Report Number: 21-95239-2
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1986198	1986199	1986200
Sample Reference				WS105	CBR115	WS105
Sample Number				1	1	9
Depth (m)				0.30-0.50	None Supplied	1.30-1.30
Date Sampled				24/08/2021	24/08/2021	24/08/2021
Time Taken				0900	0900	1700
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	13	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	1.1	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	1.1	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	1.9	-
Chromium (III)	mg/kg	1	NONE	34	33	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	34	35	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	25	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	17	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	35	33	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	35	42	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	77	49	-

Magnesium (water soluble)	mg/kg	5	NONE	-	-	9.7
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	4.9

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

Analytical Report Number: 21-95239-2
Project / Site name: Garth Wymott 2

Your Order No: PO09538

Lab Sample Number				1986201
Sample Reference				SS1
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				24/08/2021
Time Taken				0900
Analytical Parameter (Bulk Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Asbestos Identification	Type	N/A	ISO 17025	Chrysotile-Hard/Cement Type Material

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

Analytical Report Number : 21-95239-2
Project / Site name: Garth Wymott 2

* 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 *
1986193	BH104	None Supplied	17.00-17.00	Brown clay.
1986194	BH102	None Supplied	7.50-7.50	Brown clay.
1986195	WS104	1	0.50-0.50	Brown loam and clay with gravel and vegetation.
1986196	SA104	1	0.20-0.20	Brown loam and clay with gravel and vegetation.
1986197	CBR118	1	0.10-0.10	Brown clay and sand with gravel and vegetation.
1986198	WS105	1	0.30-0.50	Brown loam and clay with gravel and vegetation.
1986199	CBR115	1	None Supplied	Brown loam and clay with gravel and vegetation.
1986200	WS105	9	1.30-1.30	Brown clay and loam.

Analytical Report Number : 21-95239-2
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
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
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	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
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
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
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-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
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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS

Analytical Report Number : 21-95239-2
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Analytical Report Number : 21-95639

Project / Site name: Garth Wymott 2

Samples received on: 27/08/2021

Your job number: C19851

Samples instructed on/ Analysis started on: 27/08/2021

Your order number: PO09538

Analysis completed by: 03/09/2021

Report Issue Number: 1

Report issued on: 03/09/2021

Samples Analysed: 3 bulk samples - 10 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.

Analytical Report Number: 21-95639
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1988688	1988689	1988690	1988692	1988694
Sample Reference				CBR105A	CBR113	CBR109	CBR101	CBR111
Sample Number				1	1	1	1	1
Depth (m)				0.60	0.30	0.30-0.40	0.40-0.60	0.20
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Taken				0900	0900	0900	0900	0900
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	%	0.01	NONE	18	21	11	5.5	13
Total mass of sample received	kg	0.001	NONE	1.7	1.7	1.7	1.7	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	7.9	7.4	7.5	7.8	7.6
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.031	0.0079	0.043	0.33	0.018
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.032	0.060	0.030	0.013	0.032
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	0.31	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.46	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.45	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.33	0.40	0.32	5.1	0.34
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.7	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.42	0.59	0.50	12	1.3
Pyrene	mg/kg	0.05	MCERTS	0.45	0.52	0.47	12	1.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.33	0.32	0.31	7.3	0.98
Chrysene	mg/kg	0.05	MCERTS	0.28	0.28	0.28	5.3	0.88
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.23	0.29	< 0.05	7.2	1.2
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	3.9	0.68
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.21	0.22	< 0.05	7.0	1.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	4.8	0.76
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.2	0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	5.2	0.89
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	2.25	2.62	1.88	73.7	9.96
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	30	12	11	17	21
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	3.6	0.98	1.0	0.97	1.7
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	1.4	0.8	1.1	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	23	30	33	26	41
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	30	33	27	41
Copper (aqua regia extractable)	mg/kg	1	MCERTS	110	28	43	130	65
Lead (aqua regia extractable)	mg/kg	1	MCERTS	44	38	42	90	96
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	63	28	31	33	47
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	62	36	35	37	53
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	83	61	79	320	170

Analytical Report Number: 21-95639
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1988688	1988689	1988690	1988692	1988694
Sample Reference				CBR105A	CBR113	CBR109	CBR101	CBR111
Sample Number				1	1	1	1	1
Depth (m)				0.60	0.30	0.30-0.40	0.40-0.60	0.20
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Taken				0900	0900	0900	0900	0900
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-	-
TPH Total C5 - C44	mg/kg	10	NONE	-	-	-	-	-

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

Analytical Report Number: 21-95639
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1988695	1988696	1988697	1988698	1988699
Sample Reference				CBR124	WS107	WS103	WS103	BH104
Sample Number				1	1	1	4	1
Depth (m)				0.20-0.30	0.30	0.20	1.00	0.50
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	20/08/2021
Time Taken				0900	0900	0900	0900	0900
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	%	0.01	NONE	12	11	11	16	16
Total mass of sample received	kg	0.001	NONE	1.7	1.7	1.7	1.7	1.0

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	7.8	8.1	8.0	7.8	-
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.017	0.040	0.018	0.019	-
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.042	0.034	0.017	0.0045	-

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	0.22	< 0.05	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	0.34	< 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	1.2	0.79	< 0.05	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	0.69	< 0.05	< 0.05	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	5.8	0.91	< 0.05	< 0.05	-
Pyrene	mg/kg	0.05	MCERTS	6.5	0.82	< 0.05	< 0.05	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.6	0.45	< 0.05	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	3.2	0.37	< 0.05	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	4.3	0.41	< 0.05	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	2.4	0.27	< 0.05	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	5.2	0.49	< 0.05	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.6	0.27	< 0.05	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.69	< 0.05	< 0.05	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.1	0.34	< 0.05	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	39.8	5.12	< 0.80	< 0.80	-

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	11	12	14	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	0.86	0.89	1.0	-
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	0.6	0.6	0.2	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	< 0.2	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	-
Chromium (III)	mg/kg	1	NONE	31	26	26	42	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	26	26	42	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	46	63	27	13	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	48	49	31	15	-
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	62	29	27	29	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	27	32	49	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	85	73	48	-

Analytical Report Number: 21-95639
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1988695	1988696	1988697	1988698	1988699
Sample Reference				CBR124	WS107	WS103	WS103	BH104
Sample Number				1	1	1	4	1
Depth (m)				0.20-0.30	0.30	0.20	1.00	0.50
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	20/08/2021
Time Taken				0900	0900	0900	0900	0900
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	< 2.0	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	< 8.0	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	< 8.0	-	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	< 10	< 10	-	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	< 8.4	-	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	< 10	-	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	< 10	< 10	-	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	< 2.0	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	< 10	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	< 10	< 10	-	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	< 8.4	-	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	< 10	-	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	< 10	< 10	-	< 10
TPH Total C5 - C44	mg/kg	10	NONE	-	< 10	< 10	-	< 10

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

Analytical Report Number: 21-95639
Project / Site name: Garth Wymott 2

Your Order No: PO09538

Lab Sample Number				1988691	1988693	1988700
Sample Reference				CBR109	CBR101	BH107
Sample Number				2	2	1
Depth (m)				0.30	0.55	0.10-0.30
Date Sampled				25/08/2021	25/08/2021	25/08/2021
Time Taken				0900	0900	0900
Analytical Parameter (Bulk Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Asbestos Identification	Type	N/A	ISO 17025	Chrysotile - Hard/Cement Type Material	Chrysotile - Hard/Cement Type Material	No Asbestos Detected

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

Analytical Report Number : 21-95639
Project / Site name: Garth Wymott 2

* 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 *
1988688	CBR105A	1	0.6	Brown loam and clay with gravel and vegetation.
1988689	CBR113	1	0.3	Brown clay and loam with gravel and vegetation.
1988690	CBR109	1	0.30-0.40	Brown clay and loam with gravel and vegetation.
1988692	CBR101	1	0.40-0.60	Brown loam and clay with gravel and vegetation.
1988694	CBR111	1	0.2	Brown loam and clay with gravel and vegetation.
1988695	CBR124	1	0.20-0.30	Brown loam and clay with gravel and vegetation.
1988696	WS107	1	0.3	Brown loam and clay with gravel and vegetation.
1988697	WS103	1	0.2	Brown clay and loam with gravel and vegetation.
1988698	WS103	4	1	Brown clay and sand.
1988699	BH104	1	0.5	Brown clay and loam with gravel and vegetation.

Analytical Report Number : 21-95639
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
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 (Lower Level)	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
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
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
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
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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	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
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

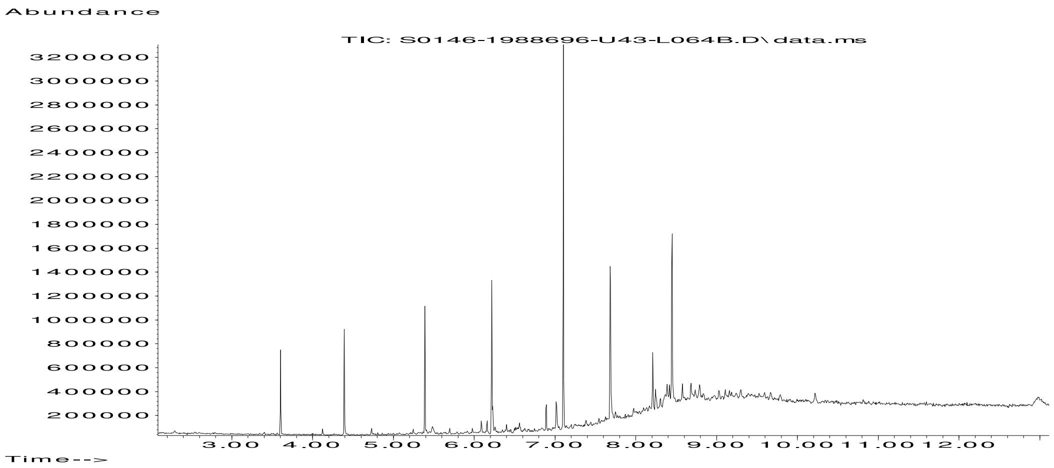
Analytical Report Number : 21-95639
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.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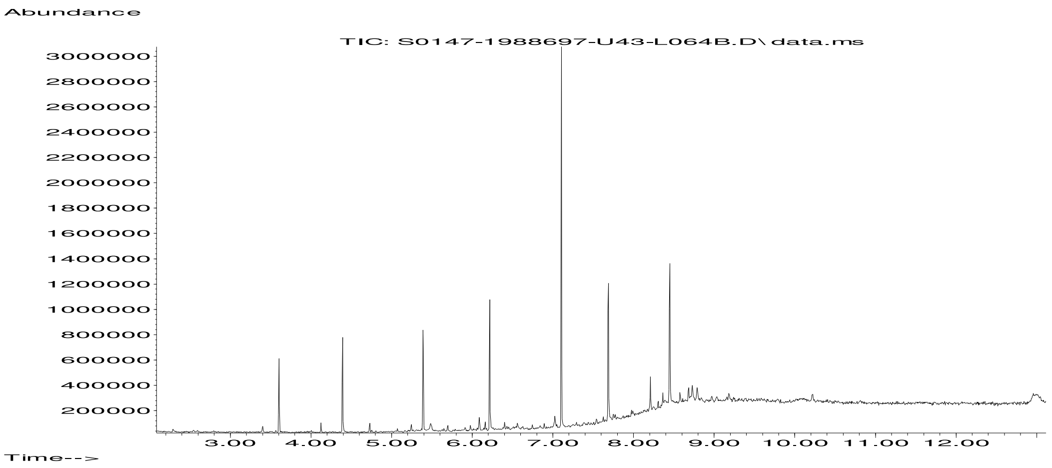
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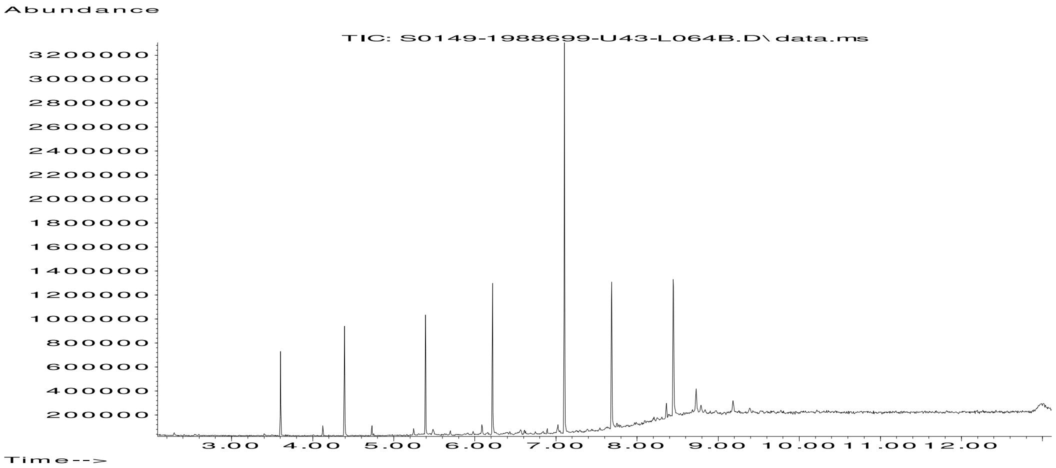
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Rob Crookes
Hydrock Consultants Ltd
4 Lakeside
Festival Park
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ST1 5RY

t: 01782 261919
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7 Woodshots Meadow,
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Analytical Report Number : 21-95906

Project / Site name:	Garth Wymott 2	**Samples received on:**	31/08/2021
Your job number:	19851	**Samples instructed on/ Analysis started on:**	31/08/2021
Your order number:	PO09538	**Analysis completed by:**	06/09/2021
Report Issue Number:	1	**Report issued on:**	06/09/2021
Samples Analysed:	2 bulk samples - 6 soil samples		

Signed: Karoline Marek

Karolina Marek
PL Head of 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.

Analytical Report Number: 21-95906
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1990699	1990701	1990702	1990703	1990704
Sample Reference				BH107A	CT21	CT22	CT23	SA105
Sample Number				1	1	2	3	1
Depth (m)				0.40	0.25	0.25	0.10	0.30-0.50
Date Sampled				26/08/2021	27/08/2021	27/08/2021	27/08/2021	27/08/2021
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	%	0.01	NONE	12	19	13	24	9.8
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2	2.0

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	8.0	7.8	8.5	8.0	-
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.021	0.018	0.0044	0.015	-
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.032	0.031	0.013	0.055	-

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	0.44	< 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	0.87	< 0.05	< 0.05	0.34	-
Pyrene	mg/kg	0.05	MCERTS	0.84	< 0.05	< 0.05	0.35	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.53	< 0.05	< 0.05	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	0.33	< 0.05	< 0.05	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.36	< 0.05	< 0.05	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.29	< 0.05	< 0.05	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.42	< 0.05	< 0.05	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.25	< 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	0.29	< 0.05	< 0.05	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	4.62	< 0.80	< 0.80	< 0.80	-

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	11	12	15	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3	0.97	1.1	1.0	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	0.7	0.4	1.4	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.8	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	-
Chromium (III)	mg/kg	1	NONE	33	34	35	32	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	34	35	32	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	77	23	23	41	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	87	28	18	61	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.6	0.6	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	34	28	35	31	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	41	35	36	35	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	92	67	67	140	-

Analytical Report Number: 21-95906
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1990699	1990701	1990702	1990703	1990704
Sample Reference				BH107A	CT21	CT22	CT23	SA105
Sample Number				1	1	2	3	1
Depth (m)				0.40	0.25	0.25	0.10	0.30-0.50
Date Sampled				26/08/2021	27/08/2021	27/08/2021	27/08/2021	27/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	-	-	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	< 10	-	-	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	-	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	-	-	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	< 10	-	-	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	-	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	< 10	-	-	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	-	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	-	-	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	< 10	-	-	< 10

TPH Total C5 - C44	mg/kg	10	NONE	-	< 10	-	-	< 10

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

Analytical Report Number: 21-95906
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1990705
Sample Reference				SA101
Sample Number				1
Depth (m)				0.30-0.40
Date Sampled				27/08/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	17
Total mass of sample received	kg	0.001	NONE	2.0

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.3
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.021
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.030

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.33
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.78
Pyrene	mg/kg	0.05	MCERTS	0.79
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.55
Chrysene	mg/kg	0.05	MCERTS	0.43
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.38
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.26
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.39
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.22
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.25

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	4.38

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	26
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.4
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2
Chromium (III)	mg/kg	1	NONE	29
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	49
Lead (aqua regia extractable)	mg/kg	1	MCERTS	46
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	40
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	84

Analytical Report Number: 21-95906
Project / Site name: Garth Wymott 2
Your Order No: PO09538

Lab Sample Number				1990705
Sample Reference				SA101
Sample Number				1
Depth (m)				0.30-0.40
Date Sampled				27/08/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Monoaromatics & Oxygenates				
Benzene	µg/kg	1	MCERTS	-
Toluene	µg/kg	1	MCERTS	-
Ethylbenzene	µg/kg	1	MCERTS	-
p & m-xylene	µg/kg	1	MCERTS	-
o-xylene	µg/kg	1	MCERTS	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-
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TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-
TPH Total C5 - C44	mg/kg	10	NONE	-

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

Analytical Report Number: 21-95906
Project / Site name: Garth Wymott 2

Your Order No: PO09538

Lab Sample Number				1990700	1990706
Sample Reference				BH107A	SA101
Sample Number				None Supplied	2
Depth (m)				0.15-0.90	0.35
Date Sampled				26/08/2021	27/08/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Bulk Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Asbestos Identification	Type	N/A	ISO 17025	Chrysotile-Hard/Cement Type Material	No Asbestos Detected

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

Analytical Report Number : 21-95906
Project / Site name: Garth Wymott 2

* 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 *
1990699	BH107A	1	0.4	Brown loam and clay with gravel and vegetation.
1990701	CT21	1	0.25	Brown clay and loam with gravel and vegetation.
1990702	CT22	2	0.25	Brown clay and loam with gravel and vegetation.
1990703	CT23	3	0.1	Brown clay and loam with gravel and vegetation.
1990704	SA105	1	0.30-0.50	Brown clay and loam with gravel and vegetation.
1990705	SA101	1	0.30-0.40	Brown clay and loam with gravel and vegetation.

Analytical Report Number : 21-95906
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
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 (Lower Level)	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
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
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
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
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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	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
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

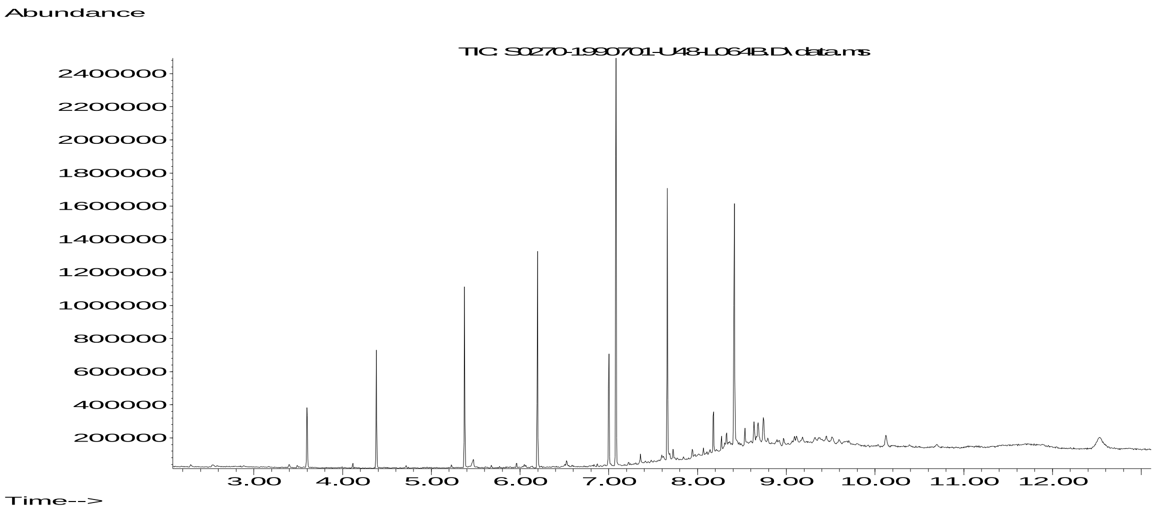
Analytical Report Number : 21-95906
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Abundance
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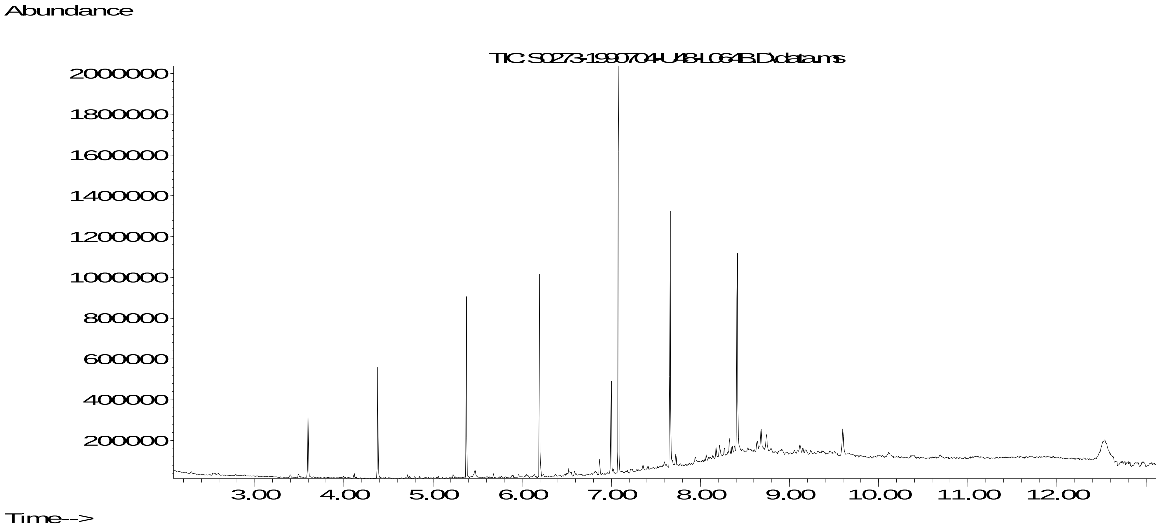
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CLEA Datasheets

Assessment of Chemicals of Potential Concern to Human Health

						Soil Type	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
	All values in mg/kg unless otherwise stated					Location & Depth	WS104	SA104	CBR118	WS105	CBR115	CBR109	CBR111	WS107	BH107A	CT21	CT22	CT23	SA101	WS101E	WS101E	WS102E	WS106E	WS109E	WS109E	WS117E	WS125E	CBR105A
							0.5	0.2	0.1	0.3	0.2	0.3	0.2	0.30	0.40	0.25	0.25	0.10	0.3	0.10	2.30	0.10	1.20	0.10	0.80	0.20	0.10	0.60
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**																						
Arsenic	1	22	6.1	30	0	40	12	11	9.4	10	13	11	21	11	14	11	12	15	26	14	16	6.9	10	13	13	6.1	8.6	30
Beryllium	0.06	19	0.3	3.6	0	73	0.89	0.82	0.3	1.1	1.1	1	1.7	0.86	1.3	0.97	1.1	1	1.4	1.3	-	1.1	-	1.1	-	0.97	0.71	3.6
Boron	0.2	15	0.3	1.6	0	11000	0.7	0.2	0.2	0.6	1.1	0.8	0.9	0.6	0.7	0.7	0.4	1.4	0.2	0.7	-	0.8	-	1.6	-	0.2	0.3	0.5
Cadmium	0.2	1	0.8	0.8	0	87	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Chromium (III)	1	17	8.1	47	0	890	28	24	8.1	34	33	33	41	26	33	34	35	32	29	-	33	-	47	-	32	-	-	23
Chromium (VI)	1.2	1	1.9	1.9	0	6.1	1.2	1.2	1.2	1.2	1.9	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	22	13	110	0	7300	26	55	13	31	25	43	65	63	77	23	23	41	49	35	29	23	30	60	89	16	29	110
Lead	2	22	9.6	110	0	310	75	68	9.6	30	17	42	96	49	87	28	18	61	46	51	15	15	20	70	110	13	23	44
Mercury, inorganic	0.3	3	0.6	0.7	0	240	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.6	0.3	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Nickel	2	22	6.2	63	0	180	28	25	6.2	35	33	31	47	29	34	28	35	31	33	31	38	44	54	35	35	31	22	63
Selenium	1	0	0	0	0	600	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Vanadium	1	19	8.2	62	0	1200	32	28	8.2	35	42	35	53	27	41	35	36	35	40	42	-	41	-	36	-	41	25	62
Zinc	2	22	16	170	0	40000	73	140	16	77	49	79	170	85	92	67	67	140	84	95	65	64	90	86	95	52	52	83
Cyanide (free)	1	0	0	0	0	800	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Phenol (total)	2	1	2.7	2.7	0	1300	1	1	1	1	2.7	1	1	1	1	1	1	1	1	-	1	-	1	-	1	-	-	1
Acenaphthene	0.05	1	0.24	0.24	0	4700	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.24	-	-	0.05	0.05	0.05	0.05	0.05	0.05
Acenaphthylene	0.05	0	0	0	0	4600	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-	-	0.05	0.05	0.05	0.05	0.05	0.05
Anthracene	0.05	1	0.4	0.4	0	35000	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.4	-	-	0.05	0.05	0.05	0.05	0.05	0.05
Benz(a)anthracene	0.05	11	0.28	1.2	0	7.8	0.05	0.68	0.39	0.05	0.05	0.31	0.98	0.45	0.53	0.05	0.05	0.05	0.55	1.2	-	-	0.05	0.28	0.61	0.05	0.05	0.33
Benzo(a)pyrene	0.05	10	0.2	1.4	0	1.6	0.05	0.52	0.45	0.05	0.05	0.05	1.4	0.49	0.42	0.05	0.05	0.05	0.39	0.9	-	-	0.05	0.2	0.48	0.05	0.05	0.21
Benzo(b)fluoranthene	0.05	10	0.23	1.2	0	11	0.05	0.68	0.51	0.05	0.05	0.05	1.2	0.41	0.36	0.05	0.05	0.05	0.38	1.1	-	-	0.05	0.27	0.68	0.05	0.05	0.23
Benzo(ghi)perylene	0.05	7	0.25	0.89	0	72	0.05	0.61	0.45	0.05	0.05	0.05	0.89	0.34	0.29	0.05	0.05	0.05	0.25	0.51	-	-	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(k)fluoranthene	0.05	9	0.19	0.68	0	16	0.05	0.55	0.3	0.05	0.05	0.05	0.68	0.27	0.29	0.05	0.05	0.05	0.26	0.33	-	-	0.05	0.19	0.25	0.05	0.05	0.05
Chrysene	0.05	11	0.21	0.88	0	16	0.05	0.72	0.46	0.05	0.05	0.28	0.88	0.37	0.33	0.05	0.05	0.05	0.43	0.81	-	-	0.05	0.21	0.45	0.05	0.05	0.28
Dibenz(a,h)anthracene	0.05	2	0.11	0.2	0	1.4	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.11	-	-	0.05	0.05	0.05	0.05	0.05	0.05
Fluoranthene	0.05	12	0.34	2.2	0	1600	0.05	1.6	0.93	0.05	0.05	0.5	1.3	0.91	0.87	0.05	0.05	0.34	0.78	2.2	-	-	0.05	0.44	0.97	0.05	0.05	0.42
Fluorene	0.05	1	0.15	0.15	0	3800	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.15	-	-	0.05	0.05	0.05	0.05	0.05	0.05
Indeno(1,2,3,cd)pyrene	0.05	7	0.22	0.76	0	6.6	0.05	0.47	0.31	0.05	0.05	0.05	0.76	0.27	0.25	0.05	0.05	0.05	0.22	0.45	-	-	0.05	0.05	0.05	0.05	0.05	0.05
Naphthalene	0.05	0	0	0	0	5.6	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-	-	0.05	0.05	0.05	0.05	0.05	0.05
Phenanthrene	0.05	10	0.22	1.6	0	1500	0.05	0.57	0.46	0.05	0.05	0.32	0.34	0.79	0.44	0.05	0.05	0.05	0.33	1.6	-	-	0.05	0.22	0.05	0.05	0.05	0.33
Pyrene	0.05	12	0.35	2	0	3800	0.05	1.6	1	0.05	0.05	0.47	1.4	0.82	0.84	0.05	0.05	0.35	0.79	2	-	-	0.05	0.45	0.91	0.05	0.05	0.45
Asbestos identified	Y/N						N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FOC (dimensionless)	0.032335	**(mean)**					0.053	0.043	0.0057	0.002	0.076	0.03	0.032	0.034	0.032	0.031	0.013	0.055	0.03	-	0.045	-	0.013	-	0.023	-	-	0.032
SOM (calculated)	5.57%	**(mean)**					9.14%	7.41%	0.98%	0.34%	13.10%	5.17%	5.52%	5.86%	5.52%	5.34%	2.24%	9.48%	5.17%	-	7.76%	-	2.24%	-	3.97%	-	-	5.52%
pH (su)	7.8	**(mean)**					7	7.8	8.7	8.1	7.2	7.5	7.6	8.1	8	7.8	8.5	8	7.3	-	7.7	-	6.8	-	7.9	-	-	7.9

Risk parameter: **Human health - residential without plant uptake (2.5%SOM)**
Data set: GENERAL MADE GROUND
Client: MINISTRY OF JUSTICE
Site: GARTH WYMOTT 2
Job no.: C19851

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

						Soil Type	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
	All values in mg/kg unless otherwise stated					Location & Depth	WS104	SA104	CBR118	WS105	CBR115	CBR109	CBR111	WS107	BH107A	CT21	CT22	CT23	SA101	WS101E	WS101E	WS102E	WS106E	WS109E	WS109E	WS117E	WS125E	CBR105A
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.5**	**0.2**	**0.1**	**0.3**	**0.2**	**0.3**	**0.2**	**0.30**	**0.40**	**0.25**	**0.25**	**0.10**	**0.3**	**0.10**	**2.30**	**0.10**	**1.20**	**0.10**	**0.80**	**0.20**	**0.10**	**0.60**
Arsenic	1	22	6.1	30	0	250	12	11	9.4	10	13	11	21	11	14	11	12	15	26	14	16	6.9	10	13	13	6.1	8.6	30
Boron	0.2	15	0.3	1.6	0	3	0.7	0.2	0.2	0.6	1.1	0.8	0.9	0.6	0.7	0.7	0.4	1.4	0.2	0.7	-	0.8	-	1.6	-	0.2	0.3	0.5
Chromium (III)	1	17	8.1	47	0	400	28	24	8.1	34	33	33	41	26	33	34	35	32	29	-	33	-	47	-	32	-	-	23
Chromium (VI)	1.2	1	1.9	1.9	0	25	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	22	13	110	0	200	26	55	13	31	25	43	65	63	77	23	23	41	49	35	29	23	30	60	89	16	29	110
Nickel	2	22	6.2	63	0	110	28	25	6.2	35	33	31	47	29	34	28	35	31	33	31	38	44	54	35	35	31	22	63
Zinc	2	22	16	170	0	300	73	140	16	77	49	79	170	85	92	67	67	140	84	95	65	64	90	86	95	52	52	83
	Mean																											
pH (su)	7.8						7	7.8	8.7	8.1	7.2	7.5	7.6	8.1	8	7.8	8.5	8	7.3	-	7.7	-	6.8	-	7.9	-	-	7.9

Risk parameter: **Plant life pH >7**
Data set: GENERAL MADE GROUND
Client: MINISTRY OF JUSTICE
Site: GARTH WYMOTT 2
Job no.: C19851

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

						Soil Type	MG	MG	MG	MG
	All values in mg/kg unless otherwise stated					Location & Depth	CBR101	WS111E	WS118E	WS123E
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.4**	**0.20**	**0.80**	**0.20**
Arsenic	1	4	12	24	0	40	17	12	24	12
Beryllium	0.06	3	0.97	1.9	0	73	0.97	-	1.9	1.1
Boron	0.2	3	0.3	2.4	0	11000	1.1	-	2.4	0.3
Cadmium	0.2	3	0.4	0.8	0	87	0.2	0.4	0.8	0.6
Chromium (III)	1	2	26	30	0	890	26	30	-	-
Chromium (VI)	1.2	0	0	0	0	6.1	1.2	1.2	1.2	1.2
Copper	1	4	27	130	0	7300	130	27	89	75
Lead	2	4	34	100	0	310	90	43	100	34
Mercury, inorganic	0.3	1	0.4	0.4	0	240	0.3	0.3	0.4	0.3
Nickel	2	4	23	40	0	180	33	25	40	23
Selenium	1	0	0	0	0	600	1	1	1	1
Vanadium	1	3	37	49	0	1200	37	-	49	37
Zinc	2	4	96	320	0	40000	320	96	180	130
Cyanide (free)	1	0	0	0	0	800	1	1	1	1
Phenol (total)	2	0	0	0	0	1300	1	1	-	-
Acenaphthene	0.05	4	0.19	0.49	0	4700	0.46	0.36	0.19	0.49
Acenaphthylene	0.05	3	0.24	3.8	0	4600	0.31	3.8	0.05	0.24
Anthracene	0.05	4	0.27	3.1	0	35000	1.7	3.1	0.27	1.8
Benz(a)anthracene	0.05	4	2.6	45	1	7.8	7.3	45	2.6	6.8
Benzo(a)pyrene	0.05	4	2.8	70	4	1.6	7	70	2.8	5.5
Benzo(b)fluoranthene	0.05	4	3.1	71	1	11	7.2	71	3.1	5.7
Benzo(ghi)perylene	0.05	4	1.7	30	0	72	5.2	30	1.7	2.6
Benzo(k)fluoranthene	0.05	4	1.6	26	1	16	3.9	26	1.6	2.5
Chrysene	0.05	4	2	36	1	16	5.3	36	2	4.6
Dibenz(a,h)anthracene	0.05	4	0.37	7	1	1.4	1.2	7	0.37	0.61
Fluoranthene	0.05	4	3.8	60	0	1600	12	60	3.8	12
Fluorene	0.05	4	0.14	0.71	0	3800	0.45	0.71	0.14	0.45
Indeno(1,2,3,cd)pyrene	0.05	4	1.5	26	1	6.6	4.8	26	1.5	2.4
Naphthalene	0.05	3	0.23	0.98	0	5.6	0.05	0.94	0.23	0.98
Phenanthrene	0.05	4	1	5.3	0	1500	5.1	5.3	1	5.3
Pyrene	0.05	4	3.8	77	0	3800	12	77	3.8	11
Asbestos identified	Y/N						N	N	N	N
FOC (dimensionless)	0.025	**(mean)**					0.013	0.037	-	-
SOM (calculated)	4.31%	**(mean)**					2.24%	6.38%	-	-
pH (su)	7.8	**(mean)**					7.8	7.7	-	-

Risk parameter: **Human health - residential without plant uptake (2.5%SOM)**
Data set: PAHs HOTSPOTS
Client: MINISTRY OF JUSTICE
Site: GARTH WYMOTT 2
Job no.: C19851

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

						Soil Type	TS	TS	TS	TS	TS	TS	TS	TS
All values in mg/kg unless otherwise stated						Location & Depth	WS103	CBR113	WS121E	WS104E	WS113E	WS114E	WS119E	WS120E
							0.20	0.30	0.10	0.10	0.10	0.20	0.10	0.20
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**								
Arsenic	1	8	8.5	15	0	40	12	12	13	15	8.5	14	13	12
Beryllium	0.06	6	0.64	1.2	0	73	0.89	0.98	-	1.2	0.64	1.1	1	-
Boron	0.2	6	0.4	1.4	0	11000	0.6	1.4	-	0.9	1.1	0.4	0.6	-
Cadmium	0.2	3	0.4	0.5	0	87	0.2	0.2	0.5	0.2	0.2	0.2	0.5	0.4
Chromium (III)	1	4	26	39	0	890	26	30	39	-	-	-	-	38
Chromium (VI)	1.2	0	0	0	0	6.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	8	16	50	0	7300	27	28	42	50	16	27	42	33
Lead	2	8	23	86	0	310	31	38	49	86	23	37	51	43
Mercury, inorganic	0.3	1	0.4	0.4	0	240	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3
Nickel	2	8	19	37	0	180	27	28	37	37	19	30	28	33
Selenium	1	0	0	0	0	600	1	1	1	1	1	1	1	1
Vanadium	1	6	29	43	0	1200	32	36	-	43	29	40	38	-
Zinc	2	8	38	190	0	40000	73	61	98	190	38	73	110	91
Cyanide (free)	1	0	0	0	0	800	1	1	1	1	1	1	1	1
Phenol (total)	2	0	0	0	0	1300	1	1	1	1	1	1	1	1
Acenaphthene	0.05	1	0.18	0.18	0	4700	0.05	0.05	0.18	0.05	0.05	0.05	0.05	0.05
Acenaphthylene	0.05	0	0	0	0	4600	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Anthracene	0.05	2	0.12	0.2	0	35000	0.05	0.05	0.05	0.12	0.05	0.05	0.2	0.05
Benz(a)anthracene	0.05	6	0.23	1.3	0	7.8	0.05	0.32	0.23	0.8	0.05	0.35	1.3	0.33
Benzo(a)pyrene	0.05	4	0.22	1	0	1.6	0.05	0.22	0.05	0.79	0.05	0.59	1	0.05
Benzo(b)fluoranthene	0.05	4	0.29	1.3	0	11	0.05	0.29	0.05	0.9	0.05	0.52	1.3	0.05
Benzo(ghi)perylene	0.05	3	0.32	0.56	0	72	0.05	0.05	0.05	0.56	0.05	0.32	0.47	0.05
Benzo(k)fluoranthene	0.05	3	0.28	0.54	0	16	0.05	0.05	0.05	0.47	0.05	0.28	0.54	0.05
Chrysene	0.05	6	0.17	0.77	0	16	0.05	0.28	0.17	0.57	0.05	0.39	0.77	0.34
Dibenz(a,h)anthracene	0.05	1	0.12	0.12	0	1.4	0.05	0.05	0.05	0.12	0.05	0.05	0.05	0.05
Fluoranthene	0.05	6	0.41	1.9	0	1600	0.05	0.59	0.41	1.2	0.05	0.57	1.9	0.94
Fluorene	0.05	1	0.12	0.12	0	3800	0.05	0.05	0.12	0.05	0.05	0.05	0.05	0.05
Indeno(1,2,3,cd)pyrene	0.05	3	0.3	0.49	0	6.6	0.05	0.05	0.05	0.49	0.05	0.3	0.44	0.05
Naphthalene	0.05	0	0	0	0	5.6	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Phenanthrene	0.05	5	0.24	0.72	0	1500	0.05	0.4	0.24	0.44	0.05	0.05	0.72	0.59
Pyrene	0.05	6	0.4	1.7	0	3800	0.05	0.52	0.4	1.1	0.05	0.69	1.7	0.81
Asbestos identified	Y/N						N	N	N	N	N	N	N	N
FOC (dimensionless)	0.041	**(mean)**					0.017	0.06	0.061	-	-	-	-	0.026
SOM (calculated)	7.07%	**(mean)**					2.93%	10.34%	10.52%	-	-	-	-	4.48%
pH (su)	7.1	**(mean)**					8	7.4	6.4	-	-	-	-	6.7

Risk parameter: Human health - residential without plant uptake (2.5%SOM)
Data set: TOPSOIL
Client: MINISTRY OF JUSTICE
Site: GARTH WYMOTT 2
Job no.: C19851

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

						Soil Type	TS	TS	TS	TS	TS	TS	TS	TS				
	All values in mg/kg unless otherwise stated					Location & Depth	WS103	CBR113	WS121E	WS104E	WS113E	WS114E	WS119E	WS120E				
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.20**	**0.30**	**0.10**	**0.10**	**0.10**	**0.20**	**0.10**	**0.20**				
Arsenic	1	8	8.5	15	0	250	12	12	13	15	8.5	14	13	12				
Boron	0.2	6	0.4	1.4	0	3	0.6	1.4	-	0.9	1.1	0.4	0.6	-				
Chromium (III)	1	4	26	39	0	400	26	30	39	-	-	-	-	38				
Chromium (VI)	1.2	0	0	0	0	25	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2				
Copper	1	8	16	50	0	135	27	28	42	50	16	27	42	33				
Nickel	2	8	19	37	0	75	27	28	37	37	19	30	28	33				
Zinc	2	8	38	190	0	300	73	61	98	190	38	73	110	91				
	Mean																	
pH (su)	7.1						8	7.4	6.4	-	-	-	-	6.7				

Risk parameter: **Plant life pH 7**
Data set: TOPSOIL
Client: MINISTRY OF JUSTICE
Site: GARTH WYMOTT 2
Job no.: C19851

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

							Soil Type	NAT	NAT	NAT	NAT								
		All values in mg/kg unless otherwise stated					Location & Depth	WS103	WS124E	WS103E	WS116E								
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**		**1.00**	**1.10**	**1.10**	**0.70**								
Arsenic	1	4	4.3	14	0	40		14	12	12	4.3								
Beryllium	0.06	1	1	1	0	73		1	-	-	-								
Boron	0.2	0	0	0	0	11000		0.2	-	-	-								
Cadmium	0.2	1	0.3	0.3	0	87		0.2	0.2	0.2	0.2								
Chromium (III)	1	4	23	42	0	890		42	33	23	28								
Chromium (VI)	1.2	0	0	0	0	6.1		1.2	1.2	1.2	1.2								
Copper	1	4	12	40	0	7300		13	29	40	12								
Lead	2	4	12	30	0	310		15	19	30	12								
Mercury, inorganic	0.3	0	0	0	0	240		0.3	0.3	0.3	0.3								
Nickel	2	4	25	32	0	180		29	32	31	25								
Selenium	1	0	0	0	0	600		1	1	1	1								
Vanadium	1	1	49	49	0	1200		49	-	-	-								
Zinc	2	4	32	69	0	40000		48	54	69	32								
Cyanide (free)	1	0	0	0	0	800		1	1	1	1								
Phenol (total)	2	0	0	0	0	1300		1	1	1	1								
Acenaphthene	0.05	0	0	0	0	4700		0.05	0.05	-	0.05								
Acenaphthylene	0.05	0	0	0	0	4600		0.05	0.05	-	0.05								
Anthracene	0.05	0	0	0	0	35000		0.05	0.05	-	0.05								
Benz(a)anthracene	0.05	1	0.39	0.39	0	7.8		0.05	0.39	-	0.05								
Benzo(a)pyrene	0.05	1	0.28	0.28	0	1.6		0.05	0.28	-	0.05								
Benzo(b)fluoranthene	0.05	1	0.31	0.31	0	11		0.05	0.31	-	0.05								
Benzo(ghi)perylene	0.05	0	0	0	0	72		0.05	0.05	-	0.05								
Benzo(k)fluoranthene	0.05	1	0.24	0.24	0	16		0.05	0.05	-	0.05								
Chrysene	0.05	1	0.3	0.3	0	16		0.05	0.3	-	0.05								
Dibenz(a,h)anthracene	0.05	0	0	0	0	1.4		0.05	0.05	-	0.05								
Fluoranthene	0.05	1	0.57	0.57	0	1600		0.05	0.57	-	0.05								
Fluorene	0.05	0	0	0	0	3800		0.05	0.05	-	0.05								
Indeno(1,2,3,cd)pyrene	0.05	0	0	0	0	6.6		0.05	0.05	-	0.05								
Naphthalene	0.05	0	0	0	0	5.6		0.05	0.05	-	0.05								
Phenanthrene	0.05	1	0.33	0.33	0	1500		0.05	0.33	-	0.05								
Pyrene	0.05	1	0.54	0.54	0	3800		0.05	0.54	-	0.05								
Asbestos identified	Y/N							N	N	N	N								
FOC (dimensionless)	0.013875	**(mean)**						0.0045	0.006	0.042	0.003								
SOM (calculated)	2.39%	**(mean)**						0.78%	1.03%	7.24%	0.52%								
pH (su)	8.1	**(mean)**						7.8	8.7	7.8	8.1								

Risk parameter: Human health - residential without plant uptake (2.5%SOM)
Data set: NATURAL
Client: MINISTRY OF JUSTICE
Site: GARTH WYMOTT 2
Job no.: C19851

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

Hydrock

						Soil Type	**NAT**	**NAT**	**NAT**	**NAT**
	All values in mg/kg unless otherwise stated					**Location & Depth**	**WS103**	**WS124E**	**WS103E**	**WS116E**
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**1.00**	**1.10**	**1.10**	**0.70**
Arsenic	1	4	4.3	14	0	250	14	12	12	4.3
Boron	0.2	0	0	0	0	3	0.2	-	-	-
Chromium (III)	1	4	23	42	0	400	42	33	23	28
Chromium (VI)	1.2	0	0	0	0	25	1.2	1.2	1.2	1.2
Copper	1	4	12	40	0	200	13	29	40	12
Nickel	2	4	25	32	0	110	29	32	31	25
Zinc	2	4	32	69	0	300	48	54	69	32
	Mean									
pH (su)	8.1						7.8	8.7	7.8	8.1

Risk parameter: **Plant life pH >7**
Data set: NATURAL
Client: MINISTRY OF JUSTICE
Site: GARTH WYMOTT 2
Job no.: C19851

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

						Soil Type	**MG**	**MG**	**MG**	**TS**	**MG**
						All values in mg/kg unless otherwise stated **Location & Depth**	**CT21**	**SA105**	**WS107**	**WS103**	**BH104**
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.25**	**0.3**	**0.3**	**0.2**	**0.5**
Aliphatics EC5-EC6	0.001	0	0	0	0	78	0.001	0.001	0.001	0.001	0.001
Aliphatics >EC6-EC8	0.001	0	0	0	0	230	0.001	0.001	0.001	0.001	0.001
Aliphatics >EC8-EC10	0.001	0	0	0	0	65	0.001	0.001	0.001	0.001	0.001
Aliphatics >EC10-EC12	1	0	0	0	0	120	1	1	1	1	1
Aliphatics >EC12-EC16	2	0	0	0	0	59	2	2	2	2	2
Aliphatics >EC16-EC35	8	0	0	0	0	93000	8	8	8	8	8
Aliphatics >EC35-EC44	10	0	0	0	0	93000	10	10	10	10	10
Aromatics EC5-EC7	1	0	0	0	0	690	1	1	1	1	1
Aromatics >EC7-EC8	0.001	0	0	0	0	1800	0.001	0.001	0.001	0.001	0.001
Aromatics >EC8-EC10	0.001	0	0	0	0	120	0.001	0.001	0.001	0.001	0.001
Aromatics >EC10-EC12	1	0	0	0	0	590	1	1	1	1	1
Aromatics >EC12-EC16	2	0	0	0	0	2300	2	2	2	2	2
Aromatics >EC16-EC21	10	0	0	0	0	1900	10	10	10	10	10
Aromatics >EC21-EC35	10	0	0	0	0	1900	10	10	10	10	10
Aromatics >EC35-EC44	8.4	0	0	0	0	1900	8.4	8.4	8.4	8.4	8.4

	ADDITIVITY CHECK	**HAZARD QUOTIENTS FOR EACH FRACTION**				
	Aliphatics EC5-EC6	0.000	0.000	0.000	0.000	0.000
	Aliphatics >EC6-EC8	0.000	0.000	0.000	0.000	0.000
Considered additive	Aliphatics >EC8-EC10	0.000	0.000	0.000	0.000	0.000
	Aliphatics >EC10-EC12	0.008	0.008	0.008	0.008	0.008
	Aliphatics >EC12-EC16	0.034	0.034	0.034	0.034	0.034
	Aliphatics >EC16-EC35	0.000	0.000	0.000	0.000	0.000
	Aliphatics >EC35-EC44	0.000	0.000	0.000	0.000	0.000
	Aromatics EC5-EC7	0.001	0.001	0.001	0.001	0.001
	Aromatics >EC7-EC8	0.000	0.000	0.000	0.000	0.000
Considered additive	Aromatics >EC8-EC10	0.000	0.000	0.000	0.000	0.000
	Aromatics >EC10-EC12	0.002	0.002	0.002	0.002	0.002
	Aromatics >EC12-EC16	0.001	0.001	0.001	0.001	0.001
Considered additive	Aromatics >EC16-EC21	0.005	0.005	0.005	0.005	0.005
	Aromatics >EC21-EC35	0.005	0.005	0.005	0.005	0.005
	Aromatics >EC35-EC44	0.004	0.004	0.004	0.004	0.004
	Hazard Index for ali>C8-C16	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**
	Hazard Index for aro>C8-C16	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**
	Hazard Index for aro>C16-C35	**0.011**	**0.011**	**0.011**	**0.011**	**0.011**

Risk parameter: **Human health - residential without plant uptake (2.5%SOM)**
Data set: ALL DATA
Client: MINISTRY OF JUSTICE
Site: GARTH WYMOTT 2
Job no.: C19851

Hazard Index table - HI or HQ greater than 1 highlighted with yellow shading.

Legend: Main table values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Main table alues in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Determinand	Includes risk assessment fractions	GAC (mg/kg) Residential without plant uptake 2.5% SOM	Lowest GAC from list (mg/kg)	Laboratory results (mg/kg)																		
				Reporting Limit (mg/kg)	WS101E	WS101E	WS104E	WS106E	WS109E	WS109E	WS111E	WS113E	WS114E	WS116E	WS117E	WS118E	WS119E	WS120E	WS121E	WS123E	WS124E	WS125E
					0.1	**2.3**	**0.1**	**0.8**	**0.1**	**0.8**	**1**	**0.1**	**0.2**	**0.7**	**0.2**	**0.8**	**0.1**	**0.2**	**0.1**	**0.2**	**1.1**	**0.1**
EC5-EC6	Ali EC5-EC6	78	78	0.01	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Aro EC5-EC7	690																				
>EC6-EC7	Ali >EC6-EC8	230	230	0.01	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Aro EC5-EC7	690																				
>EC7-EC8	Ali >EC6-EC8	230	230	0.01	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Aro >EC7-EC8	1800																				
>EC8-EC10	Ali >EC8-EC10	65	65	0.01	2	2	2	70	2	2	7.7	2	2	2	2	2	2	2	2	9.3	2.5	12
	Aro >EC8-EC10	120																				
>EC10-EC12	Ali >EC10-EC12	120	120	1	4	4	4	2700	4	4	32	4	4	4	4	80	4	4	4	15	12	25
	Aro >EC10-EC12	590																				
>EC12-EC16	Ali >EC12-EC16	59	59	1	15	1	10	9400	1	1	170	1	1	1	1	110	6.9	1	1	44	16	25
	Aro >EC12-EC16	2300																				
>EC16-EC21	Ali >EC16-EC35	93000	1900	1	39	1	37	3400	1	1	410	1	1	1	1	170	14	1	1	88	45	59
	Aro >EC16-EC21	1900																				
>EC21-EC35	Ali >EC16-EC35	93000	1900	1	10	10	10	120	10	10	22	10	10	10	10	26	10	10	10	19	10	12
	Aro >EC21-EC35	1900																				
>EC35-EC40	Ali >EC35-EC44	93000	1900	1	55	10	49	16000	10	10	650	10	10	10	10	380	22	10	10	190	80	160
	Aro >EC35-EC44	1900																				
Data set:	**ALL DATA**			**Red text**	**denotes sample at or below reporting limit**																	
Client:	**MINISTRY OF JUSTICE**			**Yellow shading**	**dentoes exceedance of the GAC or Hazard Index >1**																	
Site:	**GARTH WYMOTT 2**																					
Job no.:	**C-19851**																					
Additivity check																						
	Considered potentially additive	>EC8-EC10	Hazard Quotient		0.031	0.031	0.031	1.077	0.031	0.031	0.118	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.143	0.038	0.185
		>EC10-EC12	Hazard Quotient		0.033	0.033	0.033	22.500	0.033	0.033	0.267	0.033	0.033	0.033	0.033	0.667	0.033	0.033	0.033	0.125	0.100	0.208
		>EC12-EC16	Hazard Quotient		0.254	0.017	0.169	159.322	0.017	0.017	2.881	0.017	0.017	0.017	0.017	1.864	0.117	0.017	0.017	0.746	0.271	0.424
			Hazard Index		**0.318**	**0.081**	**0.234**	**182.899**	**0.081**	**0.081**	**3.266**	**0.081**	**0.081**	**0.081**	**0.081**	**2.562**	**0.181**	**0.081**	**0.081**	**1.014**	**0.410**	**0.817**
	Considered potentially additive	>EC16-EC21	Hazard Quotient		0.021	0.001	0.019	1.789	0.001	0.001	0.216	0.001	0.001	0.001	0.001	0.089	0.007	0.001	0.001	0.046	0.024	0.031
		>EC21-EC35	Hazard Quotient		0.005	0.005	0.005	0.063	0.005	0.005	0.012	0.005	0.005	0.005	0.005	0.014	0.005	0.005	0.005	0.010	0.005	0.006
			Hazard Index		**0.026**	**0.006**	**0.025**	**1.853**	**0.006**	**0.006**	**0.227**	**0.006**	**0.006**	**0.006**	**0.006**	**0.103**	**0.013**	**0.006**	**0.006**	**0.056**	**0.029**	**0.037**

Hydrock Contamination Test Results (Waters)

UKAS TESTING
4041

Analytical i2
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Analytical Report Number : 21-15081

Project / Site name:	Garth Wymott 2	**Samples received on:**	07/10/2021
Your job number:	C-19851-C	**Samples instructed on/ Analysis started on:**	07/10/2021
Your order number:	PO10473	**Analysis completed by:**	14/10/2021
Report Issue Number:	1	**Report issued on:**	14/10/2021
Samples Analysed:	4 water 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.

Analytical Report Number: 21-15081
Project / Site name: Garth Wymott 2

Your Order No: PO10473

Lab Sample Number				2039906	2039907	2039908	2039909
Sample Reference				BH106	BH103	BH107A	BH108
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				7.00-7.00	4.00-4.00	4.00-4.00	4.50-4.50
Date Sampled				06/10/2021	06/10/2021	06/10/2021	06/10/2021
Time Taken				0930	1300	1430	1100
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				

General Inorganics

pH	pH Units	N/A	ISO 17025	7.5	7.5	7.2	7.4
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	1700	930	1100	900
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sulphate as SO4	µg/l	45	ISO 17025	2370000	373000	566000	112000
Chloride	mg/l	0.15	ISO 17025	35	29	24	18
Fluoride	µg/l	50	ISO 17025	210	210	120	200
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	130	3000	10000	4000
Ammoniacal Nitrogen as NH3	µg/l	15	ISO 17025	160	3600	12000	4800
Ammoniacal Nitrogen as NH4	µg/l	15	ISO 17025	170	3800	13000	5100
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	2.75	8.93	10.0	13.9
Nitrate as N	mg/l	0.01	ISO 17025	0.22	0.19	0.13	0.14
Nitrate as NO3	mg/l	0.05	ISO 17025	0.98	0.83	0.57	0.62
Nitrite as N	µg/l	1	ISO 17025	1.0	< 1.0	3.0	< 1.0
Nitrite as NO2	µg/l	5	ISO 17025	< 5.0	< 5.0	9.8	< 5.0

Hardness - Total	mgCaCO3/l	1	ISO 17025	2130	771	909	523
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002	< 0.002	< 0.002	< 0.002

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	3.2	2.0	6.4

Analytical Report Number: 21-15081
Project / Site name: Garth Wymott 2

Your Order No: PO10473

Lab Sample Number				2039906	2039907	2039908	2039909
Sample Reference				BH106	BH103	BH107A	BH108
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				7.00-7.00	4.00-4.00	4.00-4.00	4.50-4.50
Date Sampled				06/10/2021	06/10/2021	06/10/2021	06/10/2021
Time Taken				0930	1300	1430	1100
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Speciated PAHs							
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
PAH Sums							
Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020
Sum of Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.04	NONE	< 0.040	< 0.040	< 0.040	< 0.040
Total PAH							
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16

Analytical Report Number: 21-15081
Project / Site name: Garth Wymott 2

Your Order No: PO10473

Lab Sample Number				2039906	2039907	2039908	2039909
Sample Reference				BH106	BH103	BH107A	BH108
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				7.00-7.00	4.00-4.00	4.00-4.00	4.50-4.50
Date Sampled				06/10/2021	06/10/2021	06/10/2021	06/10/2021
Time Taken				0930	1300	1430	1100
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				

Heavy Metals / Metalloids

Boron (dissolved)	µg/l	10	ISO 17025	370	280	270	170
Calcium (dissolved)	mg/l	0.012	ISO 17025	650	200	250	140
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	4.4	5.5	3.9
Iron (dissolved)	mg/l	0.004	ISO 17025	0.019	0.24	0.024	0.12
Iron (dissolved)	µg/l	4	ISO 17025	19	240	24	120
Magnesium (dissolved)	mg/l	0.005	ISO 17025	120	68	69	43
Sodium (dissolved)	mg/l	0.01	ISO 17025	250	96	120	62

Aluminium (dissolved)	µg/l	1	ISO 17025	3.7	2.4	7.0	3.0
Antimony (dissolved)	µg/l	0.4	ISO 17025	0.6	0.5	< 0.4	0.5
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.35	7.48	2.48	5.70
Barium (dissolved)	µg/l	0.06	ISO 17025	54	100	210	200
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.05	< 0.02	< 0.02	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	1.0	4.4	5.5	3.9
Cobalt (dissolved)	µg/l	0.2	ISO 17025	2.8	3.0	4.3	2.2
Copper (dissolved)	µg/l	0.5	ISO 17025	2.9	< 0.5	0.9	< 0.5
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	1300	1700	2200	1600
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	11	6.3	15	3.1
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.9	2.1	2.3	1.2
Silver (dissolved)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Tin (dissolved)	µg/l	0.2	ISO 17025	0.34	0.24	0.32	0.24
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	8.2	2.7	5.9	4.1

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
Toluene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
Ethylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
p & m-xylene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
o-xylene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
Sum of m, p & o-Xylene	µg/l	2	ISO 17025	-	< 2.0	< 2.0	-

Analytical Report Number: 21-15081
Project / Site name: Garth Wymott 2

Your Order No: PO10473

Lab Sample Number				2039906	2039907	2039908	2039909
Sample Reference				BH106	BH103	BH107A	BH108
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				7.00-7.00	4.00-4.00	4.00-4.00	4.50-4.50
Date Sampled				06/10/2021	06/10/2021	06/10/2021	06/10/2021
Time Taken				0930	1300	1430	1100
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	-	230	94	-
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	-	52	35	-
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	-	< 10	< 10	-
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	-	< 10	< 10	-
TPH-CWG - Aliphatic >C16 - C35	µg/l	10	NONE	-	< 10	< 10	-
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	-	< 10	< 10	-
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	-	280	130	-
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	-	280	130	-
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	-	< 1.0	< 1.0	-
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	-	82	< 10	-
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	-	34	< 10	-
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	-	< 10	< 10	-
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	-	< 10	< 10	-
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	-	< 10	< 10	-
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	-	120	< 10	-
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	-	120	< 10	-
TPH-CWG Total C5 - C44	µg/l	10	NONE	-	400	130	-

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

Analytical Report Number : 21-15081
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Speciated EPA-16 PAHs in water (LOW LEVEL Dets)	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270 (low level)	L102B-PL	W	NONE
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE

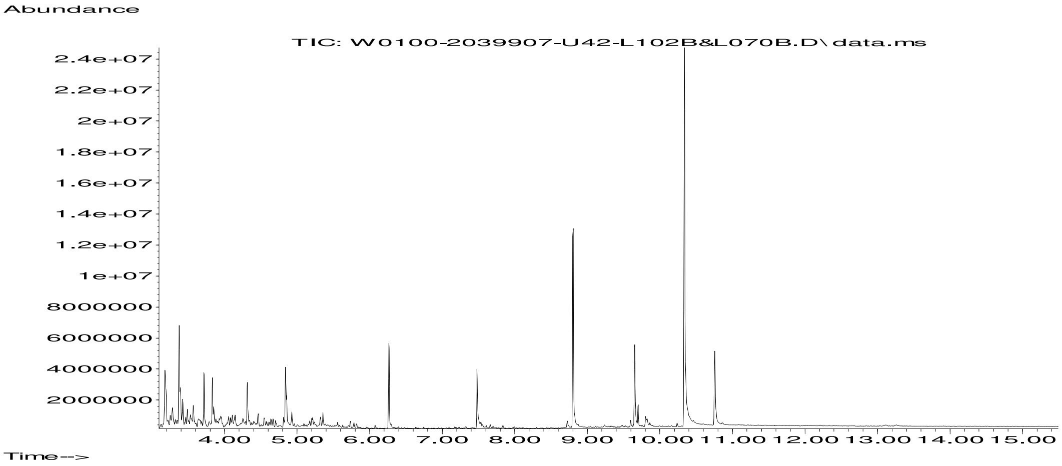
Analytical Report Number : 21-15081
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonia as NH3 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
TPH Chromatogram in Water	TPH Chromatogram in Water.	In-house method	L070-PL	W	NONE
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
Free cyanide (low level) in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Bromate in Water	Determination of bromate in waters based on ion chromatography. Accredited matrices GW, PW, SW.	In house method based on Standard Methods for the Analysis of Water and Waste Water, method 4500	L008-PL	W	ISO 17025
Specific PAH sums in water	Determination of PAH compounds in water by extraction in hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Chloride in water	Determination of Chloride (diissolved) colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.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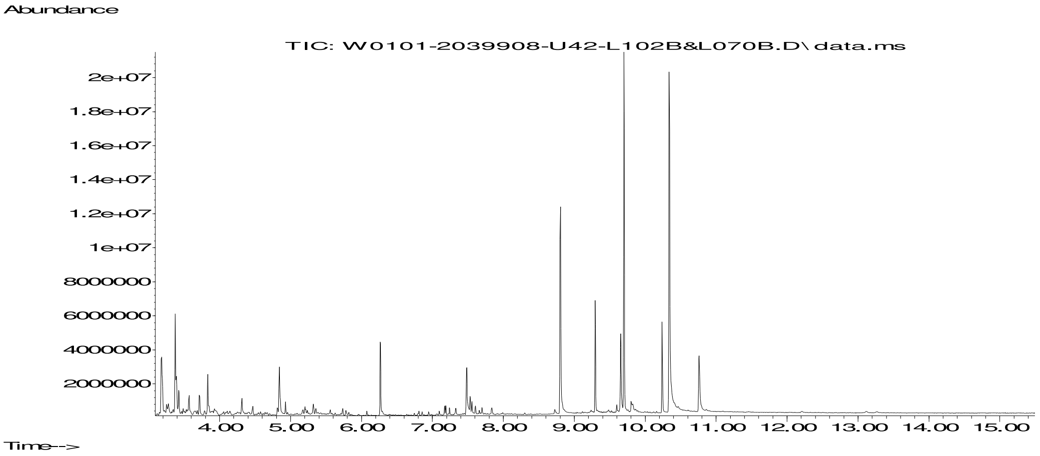
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RTM Datasheets

Summary of Remedial Targets Methodology Screening

Hydrock Scenario: Scenario B - EQS (inland)
RTM Level: RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples
Water body receptor(s): Groundwater and surface water
Secondary receptor(s):
Data set: Groundwater
Client: Ministry of Justice
Site: Garth Wymott 2
Job no: C19851
Test Certificates(s): 21-15081-1
Dataset ALL ZONES

🟩	PNEC calculated (inland EQS)

2013/39/EU Annex I
P = priority substance
PH = priority hazardous substances.
WFD Designation (2015 Directions)
OP = Other substance identical to previous legislation
SP = Specific Pollutant

JAGDAG Hazardous Substances Determination (UK)

H	Hazardous substance
NP	Non-hazardous pollutant
(blank)	Not included in assessment

CAS / AGS Number	Chemicals of Potential Concern (concentrations in µg/l)	WFD Designation	Hazardous Substance Status	Summary of Sample Data						Value Being Compared to Target = Maximum Value	Water Quality Target (Exceeded if Red		No. Samples Exceeding Water Quality Target		No. Samples above LoD Exceeding Water Quality		Notes
				No. of Samples	No. of Samples > LoD	Limit of Detection	Minimum Value	Maximum Value	95-%ile Value			Inland Waters EQS		Inland Waters EQS		Inland Waters EQS	EQS compared to dissolved metals as an initial screen, with no adjustment for bioavailability or ABC.
7440-22-4	Silver (Ag) (dissolved)			4	0	0.05	<0.05	<0.05	<0.05	<0.05		0.05		0		0	
7429-90-5	Aluminium (Al) (dissolved)			4	4	1	2.4	7	6.505	7		n/a					
7440-38-2	Arsenic (As) (dissolved)	SP	**H**	8	8	0.15	0.35	7.48	6.857	7.48		50		0		0	
7440-42-8	Boron (B) (dissolved)		NP	4	4	10	170	370	356.5	370		2000		0		0	
7440-39-3	Barium (Ba) (dissolved)			4	4	0.06	54	210	208.5	210		n/a					
7440-43-9	Cadmium (Cd) (dissolved)	**PH**	NP	8	5	0.02	<0.02	0.05	0.05	0.05		0.08		0		0	EQS (inland) dependent on hardness of receiving surface water environment
7440-48-4	Cobalt (Co) (dissolved)		NP	4	4	0.2	2.2	4.3	4.105	4.3		3		1		1	
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	**H**	8	0	5	<5	<5	<5	<5		3.4		8		0	
16065-83-1	Chromium (III) (Cr) (dissolved)	SP		8	8	1	3.9	6.7	6.42	6.7		4.7		5		5	
7440-47-3	Chromium (Cr) (total) (dissolved)			8	3	5	3.9	6.7	6.42	6.7		n/a					
7440-50-8	Copper (Cu) (dissolved)	SP	NP	8	6	0.5	<0.5	7.4	7.12	7.4		1		5		5	Bioavailable EQS (inland)
7439-89-6	Iron (Fe) (dissolved)	SP		4	4	4	19	240	222	240		1000		0		0	
7439-97-6	Mercury (Hg) (dissolved)	**PH**	**H**	8	0	0.05	<0.05	<0.05	<0.05	<0.05		0.07		0		0	
P1286	Manganese (Mn) (dissolved)	SP		8	8	0.05	0.34	2200	2025	2200		123		5		5	Bioavailable EQS (inland)
7440-23-5	Sodium (Na) (dissolved)			4	4	10	62000	250000	230500	250000		n/a					
7440-02-0	Nickel (Ni) (dissolved)	***P***	NP	8	8	0.5	3.1	15	13.6	15		4		5		5	Bioavailable EQS (inland)
7439-92-1	Lead (Pb) (dissolved)	***P***	**H**	8	0	0.2	<0.2	<0.2	<0.2	<0.2		1.2		0		0	Bioavailable EQS (inland)
7440-36-0	Antimony (Sb) (dissolved)		NP	4	3	0.4	<0.4	0.6	0.585	0.6		n/a					
7782-49-2	Selenium (Se) (dissolved)		NP	8	7	0.6	<0.6	32	22.025	32		n/a					
7440-31-5	Tin (Sn) (dissolved)			4	4	0.2	0.24	0.34	0.337	0.34		25		0		0	
7440-62-2	Vanadium (V) (dissolved)			4	0	0.2	<0.2	<0.2	<0.2	<0.2		20		0		0	EQS (inland) dependent on hardness of receiving surface water environment
7440-66-6	Zinc (Zn) (dissolved)	SP	NP	8	8	0.5	2.7	9.2	8.85	9.2		12.3		0		0	Bioavailable EQS (inland) + ambient background concentration (ABC)
P1095	Cyanide (free) (hydrogen cyanide)	SP	NP	8	0	1	<1	<1	<1	<1		1		0		0	
57-12-5	Cyanide (total)			8	0	1	<1	<1	<1	<1		n/a					
P1140	Ammonium (NH_4^+)		NP	4	4	15	170	13000	11815	13000		n/a					
P1238	Ammnoniacal Nitrogen (as N)		NP	4	4	15	130	10000	9100	10000		300		3		3	
P1720	Ammonia (unionised) (NH_3 as N) {free ammonia}	SP	NP	4	4	15	160	12000	10920	12000		n/a					
15541-45-4	Bromate (BrO_3)			4	0	2	<2	<2	<2	<2		n/a					
16887-00-6	Chloride (Cl^-)			4	4	150	18000	35000	34100	35000		250000		0		0	
16984-48-8	Fluoride (F^-)			4	4	5	120	210	210	210		1000		0		0	EQS (inland) dependent on hardness of receiving surface water environment
P1348	Nitrate (NO_3^-)			4	4	50	570	980	957.5	980		n/a					
P1349	Nitrite (NO_2^-)			4	1	5	<5	9.8	9.08	9.8		n/a					
14808-79-8	Sulfate (SO_4^{2-})			4	4	45	56000	2370000	2070450	2370000		400000		1		1	
P1134	pH (min.) (su)			4	4	0	7.2	7.5	7.5	7.5		6		0		0	
P1134	pH (max.) (su)			4	4	0	7.2	7.5	7.5	7.5		9		0		0	
P1287	Electrical conductivity (µS/cm)			4	4	10	900	1700	1610	1700		n/a					
120-12-7	Anthracene	***PH***	**H**	4	0	0.01	<0.01	<0.01	<0.01	<0.01		0.1		0		0	
50-32-8	Benzo(a)pyrene	***PH***	H	4	0	0.01	<0.01	<0.01	<0.01	<0.01		0.00017		4		0	Benzo(a)pyrene EQS used as marker substance for the group of benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene & indeno (1,2,3-cd)pyrene
206-44-0	Fluoranthene	***P***	**H**	4	0	0.01	<0.01	<0.01	<0.01	<0.01		0.0063		4		0	
91-20-3	Naphthalene	P	NP	4	0	0.01	<0.01	<0.01	<0.01	<0.01		2		0		0	
GRP01	PAHs = sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene	***P***	**H**	4	0	0.04	<0.04	<0.04	<0.04	<0.04		n/a					
P1877	Phenol	SP	**NP**	8	4	1	<1	6.4	5.385	6.4		7.7		0		0	
P1407	Ali EC5-EC6			6	0	1	<1	<1	<1	<1		10		0		0	n-hexane fall within this fraction
P1408	Ali >EC6-EC8			6	0	1	<1	<1	<1	<1		10		0		0	n-heptane falls within this fraction
P1409	Ali >EC8-EC10			6	0	1	<1	<1	<1	<1		10		0		0	n-octane and n-nonane fall within this fraction
P1410	Ali >EC10-EC12			6	2	10	<10	230	196	230		10		2		2	
P1411	Ali >EC12-EC16			6	2	10	<10	52	47.75	52		10		2		2	
P1938	Ali >EC16-EC35			6	0	10	<10	<10	<10	<10		10		0		0	
P1415	Ali >EC35-EC44			6	0	10	<10	<10	<10	<10		10		0		0	
P1441	Aro EC5-EC7			6	0	1	<1	<1	<1	<1		10		0		0	Benzene wholly representative of this fraction
P1355	Aro >EC7-EC8			6	0	1	<1	<1	<1	<1		10		0		0	Toluene wholly representative of this fraction
P1356	Aro >EC8-EC10			6	0	1	<1	<1	<1	<1		10		0		0	Ethylbenzene / xylene / trimethylbenzene representative of this range
P1357	Aro >EC10-EC12			6	1	10	<10	82	64	82		10		1		1	Naphthalene often forms a reasonable percentage of this fraction
P1358	Aro > EC12-EC16			6	1	10	<10	34	28	34		10		1		1	2-methylnaphthalene, acenpthylene, acenapthene falls within this fraction
P1359	Aro >EC16-EC21			6	0	10	<10	<10	<10	<10		10		0		0	fluorene, anthracene, phenanthrene, pyrene falls within this range
P1360	Aro >EC21-EC35			6	0	10	<10	<10	<10	<10		10		0		0	Benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(cd)pyrene fall within this fraction
P1362	Aro >EC35-EC44			6	0	10	<10	<10	<10	<10		10		0		0	
71-43-2	Benzene	P	**H**	6	0	1	<1	<1	<1	<1		10		0		0	
108-88-3	Toluene	SP	**H**	6	0	1	<1	<1	<1	<1		74		0		0	
100-41-4	Ethylbenzene		**H**	6	0	1	<1	<1	<1	<1		20		0		0	Proposed EQS for Ethylbenzene in Water, R&D Technical Report P2-115/TR4. EA 2001
95-47-6	o-Xylene		**H**	6	0	1	<1	<1	<1	<1		30		0		0	EQS for total xylene
P1374	m,p-Xylene		**H**	6	0	1	<1	<1	<1	<1		30		0		0	EQS for total xylene
1634-04-04	Methyl tertiary butyl ether (MTBE)		**NP**	6	0	1	<1	<1	<1	<1		n/a					

Remedial Targets Methodology Data Table

Hydrock Scenario: Scenario B - EQS (inland)

RTM Level: RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples

Water body receptor(s): Groundwater and surface water
Secondary receptor(s):
Data set: Groundwater
Client: Ministry of Justice
Site: Garth Wymott 2
Job no: C19851
Test Certificates(s): 21-15081-1
Dataset ALL ZONES

▨ PNEC calculated (inland EQS)

123* Exceeds solubility value
<1 Grey text and "<" sign if value <= LoD
▨ Red fill if value > Inland Waters EQS

Surface Water Representative Hardness as mg/l $CaCO_3$ 10

								Strata / Zone	Deep G/W	Deep G/W	Deep G/W	Deep G/W	Shallow G/W	Shallow G/W	Shallow G/W	Shallow G/W	
								Date sampled:	06/10/2021	06/10/2021	06/10/2021	06/10/2021	13/11/2020	13/11/2020	13/11/2020	13/11/2020	
CAS / AGS Number	**Chemical of Potential Concern (µg/l)**	**WFD Designation**	**Hazardous Substance Status**	**Solubility Limit (µg/l)**	**No. of samples**	**Limit of Detection**		**Inland Waters EQS**	**BH106**	**BH101**	**BH107A**	**BH108**	**WS109E**	**WS112E**	**WS119E**	**WS123E**	
7440-22-4	Silver (Ag) (dissolved)				4	0.05		0.05	<0.05	<0.05	<0.05	<0.05					
7429-90-5	Aluminium (Al) (dissolved)				4	1		n/a	3.7	2.4	7	3					
7440-38-2	Arsenic (As) (dissolved)	SP	H		8	0.15		50	0.35	7.48	2.48	5.7	1.28	0.99	1.3	1.06	
7440-42-8	Boron (B) (dissolved)		NP		4	10		2000	370	280	270	170					
7440-39-3	Barium (Ba) (dissolved)				4	0.06		n/a	54	100	210	200					
7440-43-9	Cadmium (Cd) (dissolved)	PH	NP		8	0.02		0.08	0.05	<0.02	<0.02	<0.02	0.05	0.03	0.04	0.05	
7440-48-4	Cobalt (Co) (dissolved)		NP		4	0.2		3	2.8	3	4.3	2.2					
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	H		8	5		3.4	<5	<5	<5	<5	<5	<5	<5	<5	
16065-83-1	Chromium (III) (Cr) (dissolved)	SP			8	1		4.7	4.4	5.5	3.9	5	5.9	4.8	6.7	4.6	
7440-47-3	Chromium (Cr) (total) (dissolved)				8	5		n/a	<4.4	5.5	<3.9	<5	5.9	<4.8	6.7	<4.6	
7440-50-8	Copper (Cu) (dissolved)	SP	NP		8	0.5		1	2	<0.5	0.9	<0.5	4.6	4.1	7.4	6.6	
7439-89-6	Iron (Fe) (dissolved)	SP			4	4		1000	19	240	24	120					
7439-97-6	Mercury (Hg) (dissolved)	PH	H		8	0.05		0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
P1286	Manganese (Mn) (dissolved)	SP			8	0.05		123	1300	1700	2200	1600	250	65	0.34	24	
7440-23-5	Sodium (Na) (dissolved)				4	10		n/a	250000	96000	120000	62000					
7440-02-0	Nickel (Ni) (dissolved)	P	NP		8	0.5		4	11	6.3	15	3.1	8.8	3.9	3.5	5.6	
7439-92-1	Lead (Pb) (dissolved)	P	H		8	0.2		1.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
7440-36-0	Antimony (Sb) (dissolved)		NP		4	0.4		n/a	0.6	0.5	<0.4	0.5					
7782-49-2	Selenium (Se) (dissolved)		NP		8	0.6		n/a	1.9	2.1	2.3	1.2	1.3	<0.6	32	3.5	
7440-31-5	Tin (Sn) (dissolved)				4	0.2		25	0.34	0.24	0.32	0.24					
7440-62-2	Vanadium (V) (dissolved)				4	0.2		20	<0.2	<0.2	<0.2	<0.2					
7440-66-6	Zinc (Zn) (dissolved)	SP	NP		8	0.5		12.3	8.2	2.7	5.9	4.1	3.4	4.5	7.3	9.2	
P1095	Cyanide (free) (hydrogen cyanide)	SP	NP		8	1		1	<1	<1	<1	<1	<1	<1	<1	<1	
57-12-5	Cyanide (total)				8	1		n/a	<1	<1	<1	<1	<1	<1	<1	<1	
P1140	Ammonium (NH_4^+)		NP		4	15		n/a	170	3800	13000	5100					
P1238	Ammnoniacal Nitrogen (as N)		NP		4	15		300	130	3000	10000	4000					
P1720	Ammonia (unionised) (NH_3 as N) {free ammonia}	SP	NP		4	15		n/a	160	3600	12000	4800					
15541-45-4	Bromate (BrO_3)				4	2		n/a	<2	<2	<2	<2					
16887-00-6	Chloride (Cl^-)				4	150		250000	35000	29000	24000	18000					
16984-48-8	Fluoride (F^-)				4	5		1000	210	210	120	200					
P1348	Nitrate (NO_3^-)				4	50		n/a	980	830	570	620					
P1349	Nitrite (NO_2^-)				4	5		n/a	<5	<5	9.8	<5					
14808-79-8	Sulfate (SO_4^{2-})				4	45		400000	2370000	373000	56000	112000					
P1134	pH (min.) (su)				4	0		6	7.5	7.5	7.2	7.4					
P1134	pH (max.) (su)				4	0		9	7.5	7.5	7.2	7.4					
P1287	Electrical conductivity (µS/cm)				4	10		n/a	1700	930	1100	900					
120-12-7	Anthracene	PH	H	56	4	0.01		0.1	<0.01	<0.01	<0.01	<0.01					
50-32-8	Benzo(a)pyrene	PH	H	3.8	4	0.01		0.00017	<0.01	<0.01	<0.01	<0.01					
206-44-0	Fluoranthene	P	H	230	4	0.01		0.0063	<0.01	<0.01	<0.01	<0.01					
91-20-3	Naphthalene	P	NP	19000	4	0.01		2	<0.01	<0.01	<0.01	<0.01					
GRP01	PAHs = sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene	P	H		4	0.04		n/a	<0.04	<0.04	<0.04	<0.04					
P1877	Phenol	SP	NP	84100000	8	1		7.7	<1	3.2	2	6.4	<1	<1	<1	3.5	
P1407	Ali EC5-EC6			35900	6	1		10		<1	<1		<1	<1	<1	<1	
P1408	Ali >EC6-EC8			5370	6	1		10		<1	<1		<1	<1	<1	<1	
P1409	Ali >EC8-EC10			427	6	1		10		<1	<1		<1	<1	<1	<1	
P1410	Ali >EC10-EC12			33.9	6	10		10		**230 ***	**94 ***		<10	<10	<10	<10	
P1411	Ali >EC12-EC16			0.759	6	10		10		**52 ***	**35 ***		<10	<10	<10	<10	
P1938	Ali >EC16-EC35			0.00254	6	10		10		<10	<10		<10	<10	<10	<10	
P1415	Ali >EC35-EC44			0.00254	6	10		10		<10	<10		<10	<10	<10	<10	
P1441	Aro EC5-EC7			1780000	6	1		10		<1	<1		<1	<1	<1	<1	
P1355	Aro >EC7-EC8			590000	6	1		10		<1	<1		<1	<1	<1	<1	
P1356	Aro >EC8-EC10			64600	6	1		10		<1	<1		<1	<1	<1	<1	
P1357	Aro >EC10-EC12			24500	6	10		10		82	<10		<10	<10	<10	<10	
P1358	Aro > EC12-EC16			5750	6	10		10		34	<10		<10	<10	<10	<10	
P1359	Aro >EC16-EC21			653	6	10		10		<10	<10		<10	<10	<10	<10	
P1360	Aro >EC21-EC35			6.61	6	10		10		<10	<10		<10	<10	<10	<10	
P1362	Aro >EC35-EC44			6.61	6	10		10		<10	<10		<10	<10	<10	<10	
71-43-2	Benzene	P	H	1780000	6	1		10		<1	<1		<1	<1	<1	<1	
108-88-3	Toluene	SP	H	590000	6	1		74		<1	<1		<1	<1	<1	<1	
100-41-4	Ethylbenzene		H	180000	6	1		20		<1	<1		<1	<1	<1	<1	
95-47-6	o-Xylene		H	173000	6	1		30		<1	<1		<1	<1	<1	<1	
P1374	m,p-Xylene		H	200000	6	1		30		<1	<1		<1	<1	<1	<1	
1634-04-04	Methyl tertiary butyl ether (MTBE)		NP	48000000	6	1		n/a		<1	<1		<1	<1	<1	<1	

Summary of Remedial Targets Methodology Screening

Hydrock

Hydrock Scenario: Scenario B - EQS (inland)
RTM Level: RTM Level 1 - Soil Zone Assessment - leachate samples
Water body receptor(s): Groundwater and surface water
Secondary receptor(s):
Data set: **Leachates**
Client: **Ministry of Justice**
Site: **Garth Wymott 2**
Job no: **C19851**
Test Certificate(s): **21-15081-1**
Dataset ALL ZONES

🟩 PNEC calculated (inland EQS)

2013/39/EU Annex I

P = priority substance

PH = priority hazardous substances.

WFD Designation (2015 Directions)

OP = Other substance identical to previous legislation

SP = Specific Pollutant

JAGDAG Hazardous Substances Determination (UK)

H	Hazardous substance
NP	Non-hazardous pollutant
(blank)	Not included in assessment

CAS / AGS Number	Chemicals of Potential Concern (concentrations in µg/l)	WFD Designation	Hazardous Substance Status	Summary of Sample Data						Value Being Compared to Target = Maximum Value	Water Quality Target (Exceeded if Red		No. Samples Exceeding Water Quality Target		No. Samples above LoD Exceeding Water Quality		Notes
				No. of Samples	No. of Samples > LoD	Limit of Detection	Minimum Value	Maximum Value	95-%ile Value			Inland Waters EQS		Inland Waters EQS		Inland Waters EQS	EQS compared to dissolved metals as an initial screen, with no adjustment for bioavailability or ABC.
7440-38-2	Arsenic (As) (dissolved)	SP	**H**	5	2	1	<1	12	9.98	12		50		0		0	
7440-43-9	Cadmium (Cd) (dissolved)	**PH**	NP	5	1	0.08	<0.08	0.1	0.096	0.1		0.08		1		1	EQS (inland) dependent on hardness of receiving surface water environment
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	**H**	5	0	5	<5	<5	<5	<5		3.4		5		0	
16065-83-1	Chromium (III) (Cr) (dissolved)	SP		5	3	0.4	<0.4	1.6	1.58	1.6		4.7		0		0	
7440-47-3	Chromium (Cr) (total) (dissolved)			5	0	5	0.4	1.6	1.58	1.6		n/a					
7440-50-8	Copper (Cu) (dissolved)	SP	NP	5	5	0.7	4	25	23.6	25		1		5		5	Bioavailable EQS (inland)
7439-97-6	Mercury (Hg) (dissolved)	**PH**	**H**	5	0	0.5	<0.5	<0.5	<0.5	<0.5		0.07		5		0	
7440-02-0	Nickel (Ni) (dissolved)	***P***	NP	5	4	0.3	<0.3	3.5	3.3	3.5		4		0		0	Bioavailable EQS (inland)
7439-92-1	Lead (Pb) (dissolved)	***P***	**H**	5	5	1	3.1	8.1	7.44	8.1		1.2		5		5	Bioavailable EQS (inland)
7782-49-2	Selenium (Se) (dissolved)		NP	5	0	4	1	<4	<4	<4		n/a					
7440-66-6	Zinc (Zn) (dissolved)	SP	NP	5	5	0.4	2.7	18	17.8	18		12.3		2		2	Bioavailable EQS (inland) + ambient background concentration (ABC)
P1095	Cyanide (free) (hydrogen cyanide)	SP	NP	5	0	1	<1	<1	<1	<1		1		0		0	
57-12-5	Cyanide (total)			5	0	1	<1	<1	<1	<1		n/a					
P1134	pH (min.) (su)			5	5	0	7.5	8	7.98	8		6		0		0	
P1134	pH (max.) (su)			5	5	0	7.5	8	7.98	8		9		0		0	
120-12-7	Anthracene	***PH***	**H**	5	0	0.01	<0.01	<0.01	<0.01	<0.01		0.1		0		0	
50-32-8	Benzo(a)pyrene	***PH***	H	5	0	0.01	<0.01	<0.01	<0.01	<0.01		0.00017		5		0	Benzo(a)pyrene EQS used as marker substance for the group of benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene & indeno (1,2,3-cd)pyrene
206-44-0	Fluoranthene	***P***	**H**	5	0	0.01	<0.01	<0.01	<0.01	<0.01		0.0063		5		0	
91-20-3	Naphthalene	P	NP	5	0	0.01	<0.01	<0.01	<0.01	<0.01		2		0		0	
GRP01	PAHs = sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene	***P***	**H**	5	0	0.04	<0.04	<0.04	<0.04	<0.04		n/a					
P1877	Phenol	SP	**NP**	5	3	1	<1	12	11.6	12		7.7		2		2	
P1407	Ali EC5-EC6			5	0	1	<1	<1	<1	<1		10		0		0	n-hexane fall within this fraction
P1408	Ali >EC6-EC8			5	0	1	<1	<1	<1	<1		10		0		0	n-heptane falls within this fraction
P1409	Ali >EC8-EC10			5	0	1	<1	<1	<1	<1		10		0		0	n-octane and n-nonane fall within this fraction
P1410	Ali >EC10-EC12			5	0	10	<10	<10	<10	<10		10		0		0	
P1411	Ali >EC12-EC16			5	0	10	1	<10	8.2	<10		10		0		0	
P1938	Ali >EC16-EC35			5	0	10	<10	<10	<10	<10		10		0		0	
P1415	Ali >EC35-EC44			5	0	10	<10	<10	<10	<10		10		0		0	
P1441	Aro EC5-EC7			5	0	1	<1	<1	<1	<1		10		0		0	Benzene wholly representative of this fraction
P1355	Aro >EC7-EC8			5	0	1	<1	<1	<1	<1		10		0		0	Toluene wholly representative of this fraction
P1356	Aro >EC8-EC10			5	0	1	<1	<1	<1	<1		10		0		0	Ethylbenzene / xylene / trimethylbenzene representative of this range
P1357	Aro >EC10-EC12			5	0	10	<10	<10	<10	<10		10		0		0	Naphthalene often forms a reasonable percentage of this fraction
P1358	Aro > EC12-EC16			5	0	10	<10	<10	<10	<10		10		0		0	2-methylnaphthalene, acenpthylene, acenapthene falls within this fraction
P1359	Aro >EC16-EC21			5	0	10	<10	<10	<10	<10		10		0		0	fluorene, anthracene, phenanthrene, pyrene falls within this range
P1360	Aro >EC21-EC35			5	0	10	<10	<10	<10	<10		10		0		0	Benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(cd)pyrene fall within this fraction
P1362	Aro >EC35-EC44			5	0	10	<10	<10	<10	<10		10		0		0	
71-43-2	Benzene	P	**H**	5	0	1	<1	<1	<1	<1		10		0		0	
108-88-3	Toluene	SP	**H**	5	0	1	<1	<1	<1	<1		74		0		0	
100-41-4	Ethylbenzene		**H**	5	0	1	<1	<1	<1	<1		20		0		0	Proposed EQS for Ethylbenzene in Water, R&D Technical Report P2-115/TR4. EA 2001
95-47-6	o-Xylene		**H**	5	0	1	<1	<1	<1	<1		30		0		0	EQS for total xylene
P1374	m,p-Xylene		**H**	5	0	1	<1	<1	<1	<1		30		0		0	EQS for total xylene
1634-04-04	Methyl tertiary butyl ether (MTBE)		**NP**	5	0	1	<1	<1	<1	<1		n/a					

Remedial Targets Methodology Data Table

Hydrock Scenario: Scenario B - EQS (inland)
RTM Level: RTM Level 1 - Soil Zone Assessment - leachate samples

Water body receptor(s): Groundwater and surface water
Secondary receptor(s): 0
Data set: Leachates
Client: Ministry of Justice
Site: Garth Wymott 2
Job no: C19851
Test Certificates(s): 21-15081-1
Dataset ALL ZONES

🟩 PNEC calculated (inland EQS)

123* Exceeds solubility value
<1 Grey text and "<" sign if value <= LoD
🟧 Red fill if value > Inland Waters EQS

Surface Water Representative Hardness as mg/l $CaCO_3$ 10

								Strata / Zone	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground
								Date sampled:	29/10/2020	30/10/2021	02/11/2020	03/11/2020	04/11/2020
CAS / AGS Number	**Chemical of Potential Concern (µg/l)**	**WFD Designation**	**Hazardous Substance Status**	**Solubility Limit (µg/l)**	**No. of samples**	**Limit of Detection**		**Inland Waters EQS**	**WS103E**	**WS106E**	**WS115E**	**WS120E**	**WS125E**
7440-22-4	Silver (Ag) (dissolved)				0			0.05					
7429-90-5	Aluminium (Al) (dissolved)				0			n/a					
7440-38-2	Arsenic (As) (dissolved)	SP	H		5	1		50	<1	12	1.9	<1	<1
7440-42-8	Boron (B) (dissolved)		NP		0			2000					
7440-39-3	Barium (Ba) (dissolved)				0			n/a					
7440-43-9	Cadmium (Cd) (dissolved)	PH	NP		5	0.08		0.08	<0.08	0.1	<0.08	<0.08	<0.08
7440-48-4	Cobalt (Co) (dissolved)		NP		0			3					
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	H		5	5		3.4	<5	<5	<5	<5	<5
16065-83-1	Chromium (III) (Cr) (dissolved)	SP			5	0.4		4.7	0.7	<0.4	1.6	<0.4	1.5
7440-47-3	Chromium (Cr) (total) (dissolved)				5	5		n/a	<0.7	<0.4	<1.6	<0.4	<1.5
7440-50-8	Copper (Cu) (dissolved)	SP	NP		5	0.7		1	7.4	12	18	4	25
7439-89-6	Iron (Fe) (dissolved)	SP			0			1000					
7439-97-6	Mercury (Hg) (dissolved)	PH	H		5	0.5		0.07	<0.5	<0.5	<0.5	<0.5	<0.5
P1286	Manganese (Mn) (dissolved)	SP			0			123					
7440-23-5	Sodium (Na) (dissolved)				0			n/a					
7440-02-0	Nickel (Ni) (dissolved)	P	NP		5	0.3		4	1.3	2.5	3.5	<0.3	1.9
7439-92-1	Lead (Pb) (dissolved)	P	H		5	1		1.2	3.2	8.1	4.6	4.8	3.1
7440-36-0	Antimony (Sb) (dissolved)		NP		0			n/a					
7782-49-2	Selenium (Se) (dissolved)		NP		5	4		n/a	<4	<4	<4	<4	<1
7440-31-5	Tin (Sn) (dissolved)				0			25					
7440-62-2	Vanadium (V) (dissolved)				0			20					
7440-66-6	Zinc (Zn) (dissolved)	SP	NP		5	0.4		12.3	18	2.7	17	3.3	7.7
P1095	Cyanide (free) (hydrogen cyanide)	SP	NP		5	1		1	<1	<1	<1	<1	<1
57-12-5	Cyanide (total)				5	1		n/a	<1	<1	<1	<1	<1
P1140	Ammonium (NH_4^+)		NP		0			n/a					
P1238	Ammnoniacal Nitrogen (as N)		NP		0			300					
P1720	Ammonia (unionised) (NH_3 as N) {free ammonia}	SP	NP		0			n/a					
15541-45-4	Bromate (BrO_3)				0			n/a					
16887-00-6	Chloride (Cl^-)				0			250000					
16984-48-8	Fluoride (F^-)				0			1000					
P1348	Nitrate (NO_3^-)				0			n/a					
P1349	Nitrite (NO_2^-)				0			n/a					
14808-79-8	Sulfate (SO_4^{2-})				0			400000					
P1134	pH (min.) (su)				5	0		6	7.8	7.9	7.8	8	7.5
P1134	pH (max.) (su)				5	0		9	7.8	7.9	7.8	8	7.5
P1287	Electrical conductivity (µS/cm)				0			n/a					
120-12-7	Anthracene	PH	H	56	5	0.01		0.1	<0.01	<0.01	<0.01	<0.01	<0.01
50-32-8	Benzo(a)pyrene	PH	H	3.8	5	0.01		0.00017	<0.01	<0.01	<0.01	<0.01	<0.01
206-44-0	Fluoranthene	P	H	230	5	0.01		0.0063	<0.01	<0.01	<0.01	<0.01	<0.01
91-20-3	Naphthalene	P	NP	19000	5	0.01		2	<0.01	<0.01	<0.01	<0.01	<0.01
GRP01	PAHs = sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene	P	H		5	0.04		n/a	<0.04	<0.04	<0.04	<0.04	<0.04
P1877	Phenol	SP	NP	84100000	5	1		7.7	12	10	<1	<1	1.7
P1407	Ali EC5-EC6			35900	5	1		10	<1	<1	<1	<1	<1
P1408	Ali >EC6-EC8			5370	5	1		10	<1	<1	<1	<1	<1
P1409	Ali >EC8-EC10			427	5	1		10	<1	<1	<1	<1	<1
P1410	Ali >EC10-EC12			33.9	5	10		10	<10	<10	<10	<10	<10
P1411	Ali >EC12-EC16			0.759	5	10		10	<10	<1	<1	<1	<1
P1938	Ali >EC16-EC35			0.00254	5	10		10	<10	<10	<10	<10	<10
P1415	Ali >EC35-EC44			0.00254	5	10		10	<10	<10	<10	<10	<10
P1441	Aro EC5-EC7			1780000	5	1		10	<1	<1	<1	<1	<1
P1355	Aro >EC7-EC8			590000	5	1		10	<1	<1	<1	<1	<1
P1356	Aro >EC8-EC10			64600	5	1		10	<1	<1	<1	<1	<1
P1357	Aro >EC10-EC12			24500	5	10		10	<10	<10	<10	<10	<10
P1358	Aro > EC12-EC16			5750	5	10		10	<10	<10	<10	<10	<10
P1359	Aro >EC16-EC21			653	5	10		10	<10	<10	<10	<10	<10
P1360	Aro >EC21-EC35			6.61	5	10		10	<10	<10	<10	<10	<10
P1362	Aro >EC35-EC44			6.61	5	10		10	<10	<10	<10	<10	<10
71-43-2	Benzene	P	H	1780000	5	1		10	<1	<1	<1	<1	<1
108-88-3	Toluene	SP	H	590000	5	1		74	<1	<1	<1	<1	<1
100-41-4	Ethylbenzene		H	180000	5	1		20	<1	<1	<1	<1	<1
95-47-6	o-Xylene		H	173000	5	1		30	<1	<1	<1	<1	<1
P1374	m,p-Xylene		H	200000	5	1		30	<1	<1	<1	<1	<1
1634-04-04	Methyl tertiary butyl ether (MTBE)		NP	48000000	5	1		n/a	<1	<1	<1	<1	<1

Appendix F Waste Assessment

HazWasteOnline™ Assessment

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

TYWGY-GY7EZ-IP3YW

Job name

Garth Wymott 2

Description/Comments

Lab Reports: 21-95239, 21-95639, 21-95906

Project

C-19851

Site

Garth Wymott 2

Classified by

Name:
Will Swinnerton
Date:
18 Oct 2021 10:45 GMT
Telephone:
(01782) 261919

Company:
Hydrock Consultants Ltd
4 Lakeside, Festival Park, Stoke-on-Trent.
ST1 5RY

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	**Date**
Hazardous Waste Classification	08 Sep 2020

Next 3 year Refresher due by Sep 2023

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	BH107A-1-26082021-0.40		Non Hazardous		3
2	CT21-1-27082021-0.25		Non Hazardous		5
3	CT22-2-27082021-0.25		Non Hazardous		8
4	CT23-3-27082021-0.10		Non Hazardous		10
5	SA105-1-27082021-0.30		Non Hazardous		12
6	SA101-1-27082021-0.30		Non Hazardous		13
7	BH104--23082021-17.00		Non Hazardous		15
8	BH102--24082021-7.50		Non Hazardous		16
9	WS104-1-24082021-0.50		Non Hazardous		17
10	SA104-1-24082021-0.20		Non Hazardous		19
11	CBR118-1-24082021-0.10		Non Hazardous		21
12	WS105-1-24082021-0.30		Non Hazardous		23
13	CBR115-1-24082021-		Non Hazardous		25
14	WS105-9-24082021-		Non Hazardous		27
15	CBR105A-1-25082021-0.60		Non Hazardous		28
16	CBR113-1-25082021-0.30		Non Hazardous		30
17	CBR109-1-25082021-0.30		Non Hazardous		32
18	CBR101-1-25082021-0.40		Non Hazardous		34
19	CBR111-1-25082021-0.20		Non Hazardous		36
20	CBR124-1-25082021-0.20		Non Hazardous		38
21	WS107-1-25082021-0.30		Non Hazardous		40
22	WS103-1-25082021-0.20		Non Hazardous		43
23	WS103-4-25082021-1.00		Non Hazardous		46
24	BH104-1-20082021-0.50		Non Hazardous		48

Related documents

#	Name	Description
1	21-95239_HWOL_Results.hwol	.hwol file used to create the Job
2	21-95639_HWOL_Results.hwol	.hwol file used to create the Job

#	Name	Description
3	21-95906_HWOL_Results.hwol	.hwol file used to create the Job
4	Hydrock Standard plus Cresol (ammended Lead)	waste stream template used to create this Job

Report

Created by: Will Swinnerton

Created date: 18 Oct 2021 10:45 GMT

Classification of sample: BH107A-1-26082021-0.40

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

Sample details

Sample name:		LoW Code:	
BH107A-1-26082021-0.40		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
12% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
2	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
3	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
4	⚛	arsenic { arsenic trioxide }				14	mg/kg	1.32	16.266	mg/kg	0.00163 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				0.53	mg/kg		0.466	mg/kg	0.0000466 %	✓	
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				0.42	mg/kg		0.37	mg/kg	0.000037 %	✓	
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				0.36	mg/kg		0.317	mg/kg	0.0000317 %	✓	
		601-034-00-4	205-911-9	205-99-2									
8	●	benzo[ghi]perylene				0.29	mg/kg		0.255	mg/kg	0.0000255 %	✓	
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				0.29	mg/kg		0.255	mg/kg	0.0000255 %	✓	
		601-036-00-5	205-916-6	207-08-9									
10	⚛	beryllium { beryllium oxide }				1.3	mg/kg	2.775	3.175	mg/kg	0.000317 %	✓	
		004-003-00-8	215-133-1	1304-56-9									
11	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }				0.7	mg/kg	13.43	8.273	mg/kg	0.000827 %	✓	
				10294-33-4, 10294-34-5, 7637-07-2									
12	⚛	cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
13	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				33	mg/kg	1.462	42.444	mg/kg	0.00424 %	✓	
			215-160-9	1308-38-9									
14	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
15		chrysene				0.33	mg/kg		0.29	mg/kg	0.000029 %	✓	
		601-048-00-0	205-923-4	218-01-9									
16	⚛	copper { dicopper oxide; copper (I) oxide }				77	mg/kg	1.126	76.29	mg/kg	0.00763 %	✓	
		029-002-00-X	215-270-7	1317-39-1									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19	●	fluoranthene		205-912-4	206-44-0		0.87	mg/kg		0.766	mg/kg	0.0000766 %	✓	
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		0.25	mg/kg		0.22	mg/kg	0.000022 %	✓	
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	87	mg/kg		76.56	mg/kg	0.00766 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		34	mg/kg	1.579	47.259	mg/kg	0.00473 %	✓	
26	●	pH			PH		8	pH		8	pH	8pH		
27	●	phenanthrene		201-581-5	85-01-8		0.44	mg/kg		0.387	mg/kg	0.0000387 %	✓	
28	●	pyrene		204-927-3	129-00-0		0.84	mg/kg		0.739	mg/kg	0.0000739 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		92	mg/kg	1.245	100.772	mg/kg	0.0101 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		41	mg/kg	1.785	64.409	mg/kg	0.00644 %	✓	
											Total:	0.0447 %		

Key

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

Classification of sample: CT21-1-27082021-0.25

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

Sample details

Sample name:		LoW Code:	
CT21-1-27082021-0.25		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
19% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 19% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene											
			201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene											
			205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene											
			204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4		arsenic { arsenic trioxide }											
		033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	11.764	mg/kg	0.00118 %	✓	
5		benzene											
		601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
6		benzo[a]anthracene											
		601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7		benzo[a]pyrene; benzo[def]chrysene											
		601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8		benzo[b]fluoranthene											
		601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9	●	benzo[ghi]perylene											
			205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10		benzo[k]fluoranthene											
		601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
11		beryllium { beryllium oxide }											
		004-003-00-8	215-133-1	1304-56-9		0.97	mg/kg	2.775	2.181	mg/kg	0.000218 %	✓	
12		boron { ● boron tribromide/trichloride/trifluoride (combined) }											
				10294-33-4, 10294-34-5, 7637-07-2		0.7	mg/kg	13.43	7.615	mg/kg	0.000761 %	✓	
13		cadmium { cadmium sulfide }											
		048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
14		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }											
			215-160-9	1308-38-9		34	mg/kg	1.462	40.251	mg/kg	0.00403 %	✓	
15		chromium in chromium(VI) compounds { chromium(VI) oxide }											
		024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
16		chrysene											
		601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		23 mg/kg	1.126	20.975 mg/kg	0.0021 %	✓	
18		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
19		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	●	fluoranthene		205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	●	fluorene		201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24		lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	28 mg/kg		22.68 mg/kg	0.00227 %	✓	
25		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.6 mg/kg	1.353	0.658 mg/kg	0.0000658 %	✓	
26		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		28 mg/kg	1.579	35.823 mg/kg	0.00358 %	✓	
28	●	pH			PH		7.8 pH		7.8 pH	7.8 pH		
29	●	phenanthrene		201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
30	●	pyrene		204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
31		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
33	●	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
34		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
35		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		67 mg/kg	1.245	67.551 mg/kg	0.00676 %	✓	
36	●	monohydric phenols			P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
37		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		35 mg/kg	1.785	50.61 mg/kg	0.00506 %	✓	
38		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
									Total:	0.0278 %		

Key

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

Classification of sample: CT22-2-27082021-0.25

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

Sample details

Sample name:	LoW Code:	
CT22-2-27082021-0.25	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:		
13% (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene	201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene	205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene	204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4		arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	13.784	mg/kg	0.00138 %	✓	
5		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
6		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8	●	benzo[ghi]perylene	205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10		beryllium { beryllium oxide } 004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	2.656	mg/kg	0.000266 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.4	mg/kg	13.43	4.674	mg/kg	0.000467 %	✓	
12		cadmium { cadmium sulfide } 048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }	215-160-9	1308-38-9		35	mg/kg	1.462	44.504	mg/kg	0.00445 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene 601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16		copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		23	mg/kg	1.126	22.529	mg/kg	0.00225 %	✓	

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		**<LOD**
		006-007-00-5									
18		dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
		601-041-00-2	200-181-8	53-70-3							
19	●	fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
			205-912-4	206-44-0							
20	●	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
			201-695-5	86-73-7							
21	●	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
			205-893-2	193-39-5							
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	18 mg/kg		15.66 mg/kg	0.00157 %	✓	
		082-001-00-6									
23	⚛	mercury { mercury dichloride }				0.6 mg/kg	1.353	0.707 mg/kg	0.0000707 %	✓	
		080-010-00-X	231-299-8	7487-94-7							
24		naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3							
25	⚛	nickel { nickel dihydroxide }				35 mg/kg	1.579	48.096 mg/kg	0.00481 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
26	●	pH				8.5 pH		8.5 pH	8.5 pH		
				PH							
27	●	phenanthrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
			201-581-5	85-01-8							
28	●	pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
			204-927-3	129-00-0							
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		**<LOD**
		034-002-00-8									
30	⚛	zinc { zinc oxide }				67 mg/kg	1.245	72.554 mg/kg	0.00726 %	✓	
		030-013-00-7	215-222-5	1314-13-2							
31	●	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %		**<LOD**
				P1186							
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }				36 mg/kg	1.785	55.912 mg/kg	0.00559 %	✓	
		023-001-00-8	215-239-8	1314-62-1							
								Total:	0.0289 %		

Key

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

Classification of sample: CT23-3-27082021-0.10

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

Sample details

Sample name:		LoW Code:	
CT23-3-27082021-0.10		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
24% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 24% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number								
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15	mg/kg	1.32	15.052	mg/kg	0.00151 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1	mg/kg	2.775	2.109	mg/kg	0.000211 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.4	mg/kg	13.43	14.29	mg/kg	0.00143 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.8	mg/kg	1.285	0.781	mg/kg	0.0000608 %	✓	
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		32	mg/kg	1.462	35.545	mg/kg	0.00355 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
15		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		41	mg/kg	1.126	35.083	mg/kg	0.00351 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
19	●	fluoranthene		205-912-4	206-44-0		0.34	mg/kg		0.258	mg/kg	0.0000258 %	✓	
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	61	mg/kg		46.36	mg/kg	0.00464 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		31	mg/kg	1.579	37.213	mg/kg	0.00372 %	✓	
26	●	pH			PH		8	pH		8	pH	8pH		
27	●	phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
28	●	pyrene		204-927-3	129-00-0		0.35	mg/kg		0.266	mg/kg	0.0000266 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		140	mg/kg	1.245	132.438	mg/kg	0.0132 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		35	mg/kg	1.785	47.486	mg/kg	0.00475 %	✓	
											Total:	0.0374 %		

Key

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

Classification of sample: SA105-1-27082021-0.30

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

Sample details

Sample name:		LoW Code:	
SA105-1-27082021-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
9.8% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.8% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1		benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
		601-020-00-8	200-753-7	71-43-2							
2	●	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
		601-023-00-4	202-849-4	100-41-4							
3		toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
		601-021-00-3	203-625-9	108-88-3							
4	●	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		**<LOD**
				TPH							
5		xylene				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
6		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
		603-181-00-X	216-653-1	1634-04-4							
								Total:	0.001 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
<LOD	Below limit of detection
ND	Not detected

Classification of sample: SA101-1-27082021-0.30

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

Sample details

Sample name:		LoW Code:	
SA101-1-27082021-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
17% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		26	mg/kg	1.32	28.493	mg/kg	0.00285 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.55	mg/kg		0.457	mg/kg	0.0000457 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.39	mg/kg		0.324	mg/kg	0.0000324 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.38	mg/kg		0.315	mg/kg	0.0000315 %	✓	
8	●	benzo[ghi]perylene		205-883-8	191-24-2		0.25	mg/kg		0.208	mg/kg	0.0000208 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.26	mg/kg		0.216	mg/kg	0.0000216 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.4	mg/kg	2.775	3.225	mg/kg	0.000322 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		<0.2	mg/kg	13.43	<2.686	mg/kg	<0.000269 %		**<LOD**
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		29	mg/kg	1.462	35.18	mg/kg	0.00352 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
15		chrysene	601-048-00-0	205-923-4	218-01-9		0.43	mg/kg		0.357	mg/kg	0.0000357 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		49	mg/kg	1.126	45.79	mg/kg	0.00458 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19	●	fluoranthene		205-912-4	206-44-0		0.78	mg/kg		0.647	mg/kg	0.0000647 %	✓	
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		0.22	mg/kg		0.183	mg/kg	0.0000183 %	✓	
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	46	mg/kg		38.18	mg/kg	0.00382 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.7	mg/kg	1.353	0.786	mg/kg	0.0000786 %	✓	
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		33	mg/kg	1.579	43.262	mg/kg	0.00433 %	✓	
26	●	pH			PH		7.3	pH		7.3	pH	7.3 pH		
27	●	phenanthrene		201-581-5	85-01-8		0.33	mg/kg		0.274	mg/kg	0.0000274 %	✓	
28	●	pyrene		204-927-3	129-00-0		0.79	mg/kg		0.656	mg/kg	0.0000656 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		84	mg/kg	1.245	86.781	mg/kg	0.00868 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		40	mg/kg	1.785	59.268	mg/kg	0.00593 %	✓	
											Total:	0.0354 %		

Key

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

Classification of sample: BH104--23082021-17.00

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

Sample details

Sample name:		LoW Code:	
BH104--23082021-17.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
21% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 21% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH		PH		8.1	pH		8.1	pH	8.1 pH		
2	⚛	magnesium { ● magnesium phosphide; trimagnesium diphosphide } 015-005-00-3	235-023-7	12057-74-8		51	mg/kg	1.85	74.519	mg/kg	0.00745 %	✓	
										Total:	0.00745 %		

Key

🟨	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
⚛	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

Classification of sample: BH102--24082021-7.50

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

Sample details

Sample name:		LoW Code:	
BH102--24082021-7.50		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
12% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
2		magnesium { ● magnesium phosphide; trimagnesium diphosphide }				29	mg/kg	1.85	47.201	mg/kg	0.00472 %	✓	
		015-005-00-3	235-023-7	12057-74-8									
										Total:	0.00472 %		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

Classification of sample: WS104-1-24082021-0.50

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

Sample details

Sample name:	LoW Code:	
WS104-1-24082021-0.50	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:		
18% (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
2	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
3	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				12	mg/kg	1.32	12.992	mg/kg	0.0013 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
8	●	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
10		beryllium { beryllium oxide }				0.89	mg/kg	2.775	2.025	mg/kg	0.000203 %	✓	
		004-003-00-8	215-133-1	1304-56-9									
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }				0.7	mg/kg	13.43	7.709	mg/kg	0.000771 %	✓	
				10294-33-4, 10294-34-5, 7637-07-2									
12		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				28	mg/kg	1.462	33.557	mg/kg	0.00336 %	✓	
			215-160-9	1308-38-9									
14		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
15		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
16		copper { dicopper oxide; copper (I) oxide }				26	mg/kg	1.126	24.004	mg/kg	0.0024 %	✓	
		029-002-00-X	215-270-7	1317-39-1									

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19	●	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	75	mg/kg		61.5	mg/kg	0.00615 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		28	mg/kg	1.579	36.265	mg/kg	0.00363 %	✓	
26	●	pH			PH		7	pH		7	pH	7pH		
27	●	phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
28	●	pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		73	mg/kg	1.245	74.509	mg/kg	0.00745 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		32	mg/kg	1.785	46.843	mg/kg	0.00468 %	✓	
											Total:	0.0307 %		

Key

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

Classification of sample: SA104-1-24082021-0.20

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

Sample details

Sample name:		LoW Code:	
SA104-1-24082021-0.20		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
20% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	11.619	mg/kg	0.00116 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.68	mg/kg		0.544	mg/kg	0.0000544 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.52	mg/kg		0.416	mg/kg	0.0000416 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.68	mg/kg		0.544	mg/kg	0.0000544 %	✓	
8	●	benzo[ghi]perylene		205-883-8	191-24-2		0.61	mg/kg		0.488	mg/kg	0.0000488 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.55	mg/kg		0.44	mg/kg	0.000044 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.82	mg/kg	2.775	1.821	mg/kg	0.000182 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		<0.2	mg/kg	13.43	<2.686	mg/kg	<0.000269 %		<LOD
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24	mg/kg	1.462	28.062	mg/kg	0.00281 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene	601-048-00-0	205-923-4	218-01-9		0.72	mg/kg		0.576	mg/kg	0.0000576 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		55	mg/kg	1.126	49.539	mg/kg	0.00495 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19	●	fluoranthene		205-912-4	206-44-0		1.6	mg/kg		1.28	mg/kg	0.000128 %	✓	
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		0.47	mg/kg		0.376	mg/kg	0.0000376 %	✓	
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	68	mg/kg		54.4	mg/kg	0.00544 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		25	mg/kg	1.579	31.59	mg/kg	0.00316 %	✓	
26	●	pH			PH		7.8	pH		7.8	pH	7.8 pH		
27	●	phenanthrene		201-581-5	85-01-8		0.57	mg/kg		0.456	mg/kg	0.0000456 %	✓	
28	●	pyrene		204-927-3	129-00-0		1.6	mg/kg		1.28	mg/kg	0.000128 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		140	mg/kg	1.245	139.408	mg/kg	0.0139 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		28	mg/kg	1.785	39.988	mg/kg	0.004 %	✓	
											Total:	0.0373 %		

Key

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

Classification of sample: CBR118-1-24082021-0.10

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

Sample details

Sample name:		LoW Code:	
CBR118-1-24082021-0.10		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
6.4% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.4% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
2	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
3	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				9.4	mg/kg	1.32	11.617	mg/kg	0.00116 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				0.39	mg/kg		0.365	mg/kg	0.0000365 %	✓	
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				0.45	mg/kg		0.421	mg/kg	0.0000421 %	✓	
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				0.51	mg/kg		0.477	mg/kg	0.0000477 %	✓	
		601-034-00-4	205-911-9	205-99-2									
8	●	benzo[ghi]perylene				0.45	mg/kg		0.421	mg/kg	0.0000421 %	✓	
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				0.3	mg/kg		0.281	mg/kg	0.0000281 %	✓	
		601-036-00-5	205-916-6	207-08-9									
10		beryllium { beryllium oxide }				0.3	mg/kg	2.775	0.779	mg/kg	0.0000779 %	✓	
		004-003-00-8	215-133-1	1304-56-9									
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }				<0.2	mg/kg	13.43	<2.686	mg/kg	<0.000269 %		<LOD
				10294-33-4, 10294-34-5, 7637-07-2									
12		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				8.1	mg/kg	1.462	11.081	mg/kg	0.00111 %	✓	
			215-160-9	1308-38-9									
14		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
15		chrysene				0.46	mg/kg		0.431	mg/kg	0.0000431 %	✓	
		601-048-00-0	205-923-4	218-01-9									
16		copper { dicopper oxide; copper (I) oxide }				13	mg/kg	1.126	13.7	mg/kg	0.00137 %	✓	
		029-002-00-X	215-270-7	1317-39-1									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-041-00-2	200-181-8	53-70-3									
19	●	fluoranthene				0.93	mg/kg		0.87	mg/kg	0.000087 %	✓	
			205-912-4	206-44-0									
20	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-695-5	86-73-7									
21	●	indeno[123-cd]pyrene				0.31	mg/kg		0.29	mg/kg	0.000029 %	✓	
			205-893-2	193-39-5									
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	9.6	mg/kg		8.986	mg/kg	0.000899 %	✓	
		082-001-00-6											
23	⚛	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
		080-010-00-X	231-299-8	7487-94-7									
24		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
25	⚛	nickel { nickel dihydroxide }				6.2	mg/kg	1.579	9.166	mg/kg	0.000917 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26	●	pH				8.7	pH		8.7	pH	8.7 pH		
				PH									
27	●	phenanthrene				0.46	mg/kg		0.431	mg/kg	0.0000431 %	✓	
			201-581-5	85-01-8									
28	●	pyrene				1	mg/kg		0.936	mg/kg	0.0000936 %	✓	
			204-927-3	129-00-0									
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
		034-002-00-8											
30	⚛	zinc { zinc oxide }				16	mg/kg	1.245	18.641	mg/kg	0.00186 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
				P1186									
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }				8.2	mg/kg	1.785	13.702	mg/kg	0.00137 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0103 %		

Key

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

Classification of sample: WS105-1-24082021-0.30

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

Sample details

Sample name:		LoW Code:	
WS105-1-24082021-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10	mg/kg	1.32	11.619	mg/kg	0.00116 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	2.687	mg/kg	0.000269 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6	mg/kg	13.43	7.091	mg/kg	0.000709 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		34	mg/kg	1.462	43.73	mg/kg	0.00437 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		31	mg/kg	1.126	30.714	mg/kg	0.00307 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19	●	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
20	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
21	●	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	30	mg/kg		26.4	mg/kg	0.00264 %	✓	
		082-001-00-6											
23	⚛	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
24		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25	⚛	nickel { nickel dihydroxide }				35	mg/kg	1.579	48.649	mg/kg	0.00486 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26	●	pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
27	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
28	●	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
		034-002-00-8											
30	⚛	zinc { zinc oxide }				77	mg/kg	1.245	84.342	mg/kg	0.00843 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
				P1186									
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }				35	mg/kg	1.785	54.984	mg/kg	0.0055 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0318 %		

Key

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

Classification of sample: CBR115-1-24082021-

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

Sample details

Sample name:		LoW Code:	
CBR115-1-24082021-		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
28% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 28% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	12.358	mg/kg	0.00124 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	2.198	mg/kg	0.00022 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.1	mg/kg	13.43	10.637	mg/kg	0.00106 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		33	mg/kg	1.462	34.727	mg/kg	0.00347 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		1.9	mg/kg	1.923	2.631	mg/kg	0.000263 %	✓	
15		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		25	mg/kg	1.126	20.266	mg/kg	0.00203 %	✓	

#		Determinand				CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number							
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	●	fluoranthene		205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	●	fluorene		201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	17 mg/kg		12.24 mg/kg	0.00122 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		33 mg/kg	1.579	37.529 mg/kg	0.00375 %	✓	
26	●	pH			PH		7.2 pH		7.2 pH	7.2 pH		
27	●	phenanthrene		201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	●	pyrene		204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		49 mg/kg	1.245	43.914 mg/kg	0.00439 %	✓	
31	●	monohydric phenols			P1186		2.7 mg/kg		1.944 mg/kg	0.000194 %	✓	
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		42 mg/kg	1.785	53.984 mg/kg	0.0054 %	✓	
									Total:	0.0237 %		

Key

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

Supplementary Hazardous Property Information

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"

Force this Hazardous property to non hazardous because To low to be oxidising

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00026%)

Classification of sample: WS105-9-24082021-

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

Sample details

Sample name:		LoW Code:	
WS105-9-24082021-		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
15% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
2	⚛	magnesium { ● magnesium phosphide; trimagnesium diphosphide }				9.7	mg/kg	1.85	15.25	mg/kg	0.00152 %	✓	
		015-005-00-3	235-023-7	12057-74-8									
										Total:	0.00152 %		

Key

🟨	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
⚛	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

Classification of sample: CBR105A-1-25082021-0.60

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

Sample details

Sample name:		LoW Code:	
CBR105A-1-25082021-0.60		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
18% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene	201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2	●	acenaphthylene	205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3	●	anthracene	204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		30	mg/kg	1.32	32.48	mg/kg	0.00325 %	✓	
5		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		0.33	mg/kg		0.271	mg/kg	0.0000271 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		0.21	mg/kg		0.172	mg/kg	0.0000172 %	✓	
7		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		0.23	mg/kg		0.189	mg/kg	0.0000189 %	✓	
8	●	benzo[ghi]perylene	205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide } 004-003-00-8	215-133-1	1304-56-9		3.6	mg/kg	2.775	8.193	mg/kg	0.000819 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.5	mg/kg	13.43	5.506	mg/kg	0.000551 %	✓	
12		cadmium { cadmium sulfide } 048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }	215-160-9	1308-38-9		23	mg/kg	1.462	27.565	mg/kg	0.00276 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
15		chrysene 601-048-00-0	205-923-4	218-01-9		0.28	mg/kg		0.23	mg/kg	0.000023 %	✓	
16		copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		110	mg/kg	1.126	101.555	mg/kg	0.0102 %	✓	

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
17	⚗	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19	●	fluoranthene		205-912-4	206-44-0		0.42	mg/kg		0.344	mg/kg	0.0000344 %	✓	
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
22	⚗	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	44	mg/kg		36.08	mg/kg	0.00361 %	✓	
23	⚗	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚗	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		63	mg/kg	1.579	81.597	mg/kg	0.00816 %	✓	
26	●	pH			PH		7.9	pH		7.9	pH	7.9 pH		
27	●	phenanthrene		201-581-5	85-01-8		0.33	mg/kg		0.271	mg/kg	0.0000271 %	✓	
28	●	pyrene		204-927-3	129-00-0		0.45	mg/kg		0.369	mg/kg	0.0000369 %	✓	
29	⚗	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚗	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		83	mg/kg	1.245	84.715	mg/kg	0.00847 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚗	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		62	mg/kg	1.785	90.759	mg/kg	0.00908 %	✓	
											Total:	0.0478 %		

Key

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

Classification of sample: CBR113-1-25082021-0.30

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

Sample details

Sample name:
CBR113-1-25082021-0.30
Moisture content:
21%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 21% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-469-6	83-32-9									
2	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-917-1	208-96-8									
3	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				12	mg/kg	1.32	12.517	mg/kg	0.00125 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				0.32	mg/kg		0.253	mg/kg	0.0000253 %	✓	
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				0.22	mg/kg		0.174	mg/kg	0.0000174 %	✓	
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				0.29	mg/kg		0.229	mg/kg	0.0000229 %	✓	
		601-034-00-4	205-911-9	205-99-2									
8	●	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-036-00-5	205-916-6	207-08-9									
10		beryllium { beryllium oxide }				0.98	mg/kg	2.775	2.149	mg/kg	0.000215 %	✓	
		004-003-00-8	215-133-1	1304-56-9									
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }				1.4	mg/kg	13.43	14.854	mg/kg	0.00149 %	✓	
				10294-33-4, 10294-34-5, 7637-07-2									
12		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
		048-010-00-4	215-147-8	1306-23-6									
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				30	mg/kg	1.462	34.639	mg/kg	0.00346 %	✓	
			215-160-9	1308-38-9									
14		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
		024-001-00-0	215-607-8	1333-82-0									
15		chrysene				0.28	mg/kg		0.221	mg/kg	0.0000221 %	✓	
		601-048-00-0	205-923-4	218-01-9									
16		copper { dicopper oxide; copper (I) oxide }				28	mg/kg	1.126	24.905	mg/kg	0.00249 %	✓	
		029-002-00-X	215-270-7	1317-39-1									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19	●	fluoranthene		205-912-4	206-44-0		0.59	mg/kg		0.466	mg/kg	0.0000466 %	✓	
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	38	mg/kg		30.02	mg/kg	0.003 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		28	mg/kg	1.579	34.939	mg/kg	0.00349 %	✓	
26	●	pH			PH		7.4	pH		7.4	pH	7.4 pH		
27	●	phenanthrene		201-581-5	85-01-8		0.4	mg/kg		0.316	mg/kg	0.0000316 %	✓	
28	●	pyrene		204-927-3	129-00-0		0.52	mg/kg		0.411	mg/kg	0.0000411 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		61	mg/kg	1.245	59.983	mg/kg	0.006 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		36	mg/kg	1.785	50.771	mg/kg	0.00508 %	✓	
											Total:	0.0274 %		

Key

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

Classification of sample: CBR109-1-25082021-0.30

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

Sample details

Sample name:		LoW Code:	
CBR109-1-25082021-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
11% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	12.926	mg/kg	0.00129 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.31	mg/kg		0.276	mg/kg	0.0000276 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1	mg/kg	2.775	2.47	mg/kg	0.000247 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8	mg/kg	13.43	9.562	mg/kg	0.000956 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		33	mg/kg	1.462	42.926	mg/kg	0.00429 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
15		chrysene	601-048-00-0	205-923-4	218-01-9		0.28	mg/kg		0.249	mg/kg	0.0000249 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		43	mg/kg	1.126	43.088	mg/kg	0.00431 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
19	●	fluoranthene		205-912-4	206-44-0		0.5 mg/kg		0.445 mg/kg	0.0000445 %	✓	
20	●	fluorene		201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	42 mg/kg		37.38 mg/kg	0.00374 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		**<LOD**
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		31 mg/kg	1.579	43.578 mg/kg	0.00436 %	✓	
26	●	pH			PH		7.5 pH		7.5 pH	7.5 pH		
27	●	phenanthrene		201-581-5	85-01-8		0.32 mg/kg		0.285 mg/kg	0.0000285 %	✓	
28	●	pyrene		204-927-3	129-00-0		0.47 mg/kg		0.418 mg/kg	0.0000418 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		79 mg/kg	1.245	87.516 mg/kg	0.00875 %	✓	
31	●	monohydric phenols			P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		35 mg/kg	1.785	55.609 mg/kg	0.00556 %	✓	
									Total:	0.0344 %		

Key

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

Classification of sample: CBR101-1-25082021-0.40

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

Sample details

Sample name:	LoW Code:		
CBR101-1-25082021-0.40	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)	
Moisture content:			
5.5% (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)	

Hazard properties

None identified

Determinands

Moisture content: 5.5% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene				0.46	mg/kg		0.435	mg/kg	0.0000435 %	✓	
			201-469-6	83-32-9									
2	●	acenaphthylene				0.31	mg/kg		0.293	mg/kg	0.0000293 %	✓	
			205-917-1	208-96-8									
3	●	anthracene				1.7	mg/kg		1.607	mg/kg	0.000161 %	✓	
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				17	mg/kg	1.32	21.211	mg/kg	0.00212 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				7.3	mg/kg		6.899	mg/kg	0.00069 %	✓	
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				7	mg/kg		6.615	mg/kg	0.000662 %	✓	
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				7.2	mg/kg		6.804	mg/kg	0.00068 %	✓	
		601-034-00-4	205-911-9	205-99-2									
8	●	benzo[ghi]perylene				5.2	mg/kg		4.914	mg/kg	0.000491 %	✓	
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				3.9	mg/kg		3.686	mg/kg	0.000369 %	✓	
		601-036-00-5	205-916-6	207-08-9									
10		beryllium { beryllium oxide }				0.97	mg/kg	2.775	2.544	mg/kg	0.000254 %	✓	
		004-003-00-8	215-133-1	1304-56-9									
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }				1.1	mg/kg	13.43	13.96	mg/kg	0.0014 %	✓	
				10294-33-4, 10294-34-5, 7637-07-2									
12		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				26	mg/kg	1.462	35.91	mg/kg	0.00359 %	✓	
			215-160-9	1308-38-9									
14		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
15		chrysene				5.3	mg/kg		5.009	mg/kg	0.000501 %	✓	
		601-048-00-0	205-923-4	218-01-9									
16		copper { dicopper oxide; copper (I) oxide }				130	mg/kg	1.126	138.315	mg/kg	0.0138 %	✓	
		029-002-00-X	215-270-7	1317-39-1									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		1.2	mg/kg		1.134	mg/kg	0.000113 %	✓	
19	●	fluoranthene		205-912-4	206-44-0		12	mg/kg		11.34	mg/kg	0.00113 %	✓	
20	●	fluorene		201-695-5	86-73-7		0.45	mg/kg		0.425	mg/kg	0.0000425 %	✓	
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		4.8	mg/kg		4.536	mg/kg	0.000454 %	✓	
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	90	mg/kg		85.05	mg/kg	0.00851 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		33	mg/kg	1.579	49.257	mg/kg	0.00493 %	✓	
26	●	pH			PH		7.8	pH		7.8	pH	7.8 pH		
27	●	phenanthrene		201-581-5	85-01-8		5.1	mg/kg		4.82	mg/kg	0.000482 %	✓	
28	●	pyrene		204-927-3	129-00-0		12	mg/kg		11.34	mg/kg	0.00113 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		320	mg/kg	1.245	376.402	mg/kg	0.0376 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		37	mg/kg	1.785	62.419	mg/kg	0.00624 %	✓	
											Total:	0.0862 %		

Key

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

Classification of sample: CBR111-1-25082021-0.20

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

Sample details

Sample name:		LoW Code:	
CBR111-1-25082021-0.20		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
13% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4	⚛	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		21	mg/kg	1.32	24.122	mg/kg	0.00241 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.98	mg/kg		0.853	mg/kg	0.0000853 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.4	mg/kg		1.218	mg/kg	0.000122 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.2	mg/kg		1.044	mg/kg	0.000104 %	✓	
8	●	benzo[ghi]perylene		205-883-8	191-24-2		0.89	mg/kg		0.774	mg/kg	0.0000774 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.68	mg/kg		0.592	mg/kg	0.0000592 %	✓	
10	⚛	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.7	mg/kg	2.775	4.105	mg/kg	0.00041 %	✓	
11	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.9	mg/kg	13.43	10.516	mg/kg	0.00105 %	✓	
12	⚛	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		41	mg/kg	1.462	52.134	mg/kg	0.00521 %	✓	
14	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
15		chrysene	601-048-00-0	205-923-4	218-01-9		0.88	mg/kg		0.766	mg/kg	0.0000766 %	✓	
16	⚛	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		65	mg/kg	1.126	63.669	mg/kg	0.00637 %	✓	

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚗	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		0.2	mg/kg		0.174	mg/kg	0.0000174 %	✓	
19	●	fluoranthene	205-912-4	206-44-0		1.3	mg/kg		1.131	mg/kg	0.000113 %	✓	
20	●	fluorene	201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene	205-893-2	193-39-5		0.76	mg/kg		0.661	mg/kg	0.0000661 %	✓	
22	⚗	lead { ● lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	96	mg/kg		83.52	mg/kg	0.00835 %	✓	
23	⚗	mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
24		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚗	nickel { nickel dihydroxide } 028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		47	mg/kg	1.579	64.586	mg/kg	0.00646 %	✓	
26	●	pH		PH		7.6	pH		7.6	pH	7.6 pH		
27	●	phenanthrene	201-581-5	85-01-8		0.34	mg/kg		0.296	mg/kg	0.0000296 %	✓	
28	●	pyrene	204-927-3	129-00-0		1.4	mg/kg		1.218	mg/kg	0.000122 %	✓	
29	⚗	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚗	zinc { zinc oxide } 030-013-00-7	215-222-5	1314-13-2		170	mg/kg	1.245	184.093	mg/kg	0.0184 %	✓	
31	●	monohydric phenols		P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚗	vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8	215-239-8	1314-62-1		53	mg/kg	1.785	82.315	mg/kg	0.00823 %	✓	
										Total:	0.0585 %		

Key

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

Classification of sample: CBR124-1-25082021-0.20

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

Sample details

Sample name:		LoW Code:	
CBR124-1-25082021-0.20		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
12% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
2	●	acenaphthylene				0.34	mg/kg		0.299	mg/kg	0.0000299 %	✓	
			205-917-1	208-96-8									
3	●	anthracene				0.69	mg/kg		0.607	mg/kg	0.0000607 %	✓	
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				13	mg/kg	1.32	15.105	mg/kg	0.00151 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				3.6	mg/kg		3.168	mg/kg	0.000317 %	✓	
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				5.2	mg/kg		4.576	mg/kg	0.000458 %	✓	
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				4.3	mg/kg		3.784	mg/kg	0.000378 %	✓	
		601-034-00-4	205-911-9	205-99-2									
8	●	benzo[ghi]perylene				3.1	mg/kg		2.728	mg/kg	0.000273 %	✓	
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				2.4	mg/kg		2.112	mg/kg	0.000211 %	✓	
		601-036-00-5	205-916-6	207-08-9									
10		beryllium { beryllium oxide }				1.1	mg/kg	2.775	2.687	mg/kg	0.000269 %	✓	
		004-003-00-8	215-133-1	1304-56-9									
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }				1.1	mg/kg	13.43	13	mg/kg	0.0013 %	✓	
				10294-33-4, 10294-34-5, 7637-07-2									
12		cadmium { cadmium sulfide }			1	0.5	mg/kg	1.285	0.566	mg/kg	0.000044 %	✓	
		048-010-00-4	215-147-8	1306-23-6									
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				31	mg/kg	1.462	39.871	mg/kg	0.00399 %	✓	
			215-160-9	1308-38-9									
14		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
15		chrysene				3.2	mg/kg		2.816	mg/kg	0.000282 %	✓	
		601-048-00-0	205-923-4	218-01-9									
16		copper { dicopper oxide; copper (I) oxide }				46	mg/kg	1.126	45.576	mg/kg	0.00456 %	✓	
		029-002-00-X	215-270-7	1317-39-1									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }											
		006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
18		dibenz[a,h]anthracene											
		601-041-00-2	200-181-8	53-70-3		0.69	mg/kg		0.607	mg/kg	0.0000607 %	✓	
19	●	fluoranthene											
			205-912-4	206-44-0		5.8	mg/kg		5.104	mg/kg	0.00051 %	✓	
20	●	fluorene											
			201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
21	●	indeno[123-cd]pyrene											
			205-893-2	193-39-5		2.6	mg/kg		2.288	mg/kg	0.000229 %	✓	
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }											
		082-001-00-6			1	48	mg/kg		42.24	mg/kg	0.00422 %	✓	
23	⚛	mercury { mercury dichloride }											
		080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
24		naphthalene											
		601-052-00-2	202-049-5	91-20-3		0.22	mg/kg		0.194	mg/kg	0.0000194 %	✓	
25	⚛	nickel { nickel dihydroxide }											
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		62	mg/kg	1.579	86.177	mg/kg	0.00862 %	✓	
26	●	pH											
				PH		7.8	pH		7.8	pH	7.8 pH		
27	●	phenanthrene											
			201-581-5	85-01-8		1.2	mg/kg		1.056	mg/kg	0.000106 %	✓	
28	●	pyrene											
			204-927-3	129-00-0		6.5	mg/kg		5.72	mg/kg	0.000572 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }											
		034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
30	⚛	zinc { zinc oxide }											
		030-013-00-7	215-222-5	1314-13-2		120	mg/kg	1.245	131.442	mg/kg	0.0131 %	✓	
31	●	monohydric phenols											
				P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }											
		023-001-00-8	215-239-8	1314-62-1		38	mg/kg	1.785	59.697	mg/kg	0.00597 %	✓	
										Total:	0.0478 %		

Key

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

Classification of sample: WS107-1-25082021-0.30

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

Sample details

Sample name:		LoW Code:	
WS107-1-25082021-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
11% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11 mg/kg	1.32	12.926 mg/kg	0.00129 %	✓	
5		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
6		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.45 mg/kg		0.401 mg/kg	0.0000401 %	✓	
7		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.49 mg/kg		0.436 mg/kg	0.0000436 %	✓	
8		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.41 mg/kg		0.365 mg/kg	0.0000365 %	✓	
9	●	benzo[ghi]perylene		205-883-8	191-24-2		0.34 mg/kg		0.303 mg/kg	0.0000303 %	✓	
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.27 mg/kg		0.24 mg/kg	0.000024 %	✓	
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.86 mg/kg	2.775	2.124 mg/kg	0.000212 %	✓	
12		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6 mg/kg	13.43	7.172 mg/kg	0.000717 %	✓	
13		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
14		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26 mg/kg	1.462	33.82 mg/kg	0.00338 %	✓	
15		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2 mg/kg	1.923	<2.308 mg/kg	<0.000231 %		<LOD
16		chrysene	601-048-00-0	205-923-4	218-01-9		0.37 mg/kg		0.329 mg/kg	0.0000329 %	✓	

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
17	copper { dicopper oxide; copper (I) oxide }				63	mg/kg	1.126	63.129	mg/kg	0.00631 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5											
19	dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
20	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
21	fluoranthene				0.91	mg/kg		0.81	mg/kg	0.000081 %	✓	
		205-912-4	206-44-0									
22	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7									
23	indeno[123-cd]pyrene				0.27	mg/kg		0.24	mg/kg	0.000024 %	✓	
		205-893-2	193-39-5									
24	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	49	mg/kg		43.61	mg/kg	0.00436 %	✓	
	082-001-00-6											
25	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
26	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
27	nickel { nickel dihydroxide }				29	mg/kg	1.579	40.767	mg/kg	0.00408 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
28	pH				8.1	pH		8.1	pH	8.1 pH		
			PH									
29	phenanthrene				0.79	mg/kg		0.703	mg/kg	0.0000703 %	✓	
		201-581-5	85-01-8									
30	pyrene				0.82	mg/kg		0.73	mg/kg	0.000073 %	✓	
		204-927-3	129-00-0									
31	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8											
32	toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
33	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH									
34	xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
35	zinc { zinc oxide }				85	mg/kg	1.245	94.163	mg/kg	0.00942 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
36	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
			P1186									
37	vanadium { divanadium pentaoxide; vanadium pentoxide }				27	mg/kg	1.785	42.898	mg/kg	0.00429 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
38	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
									Total:	0.0363 %		

Key

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

Classification of sample: WS103-1-25082021-0.20

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

Sample details

Sample name:		LoW Code:	
WS103-1-25082021-0.20		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
11% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
2	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
3	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				12	mg/kg	1.32	14.101	mg/kg	0.00141 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
5		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
6		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
7		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
8		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
9	●	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
10		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
11		beryllium { beryllium oxide }				0.89	mg/kg	2.775	2.198	mg/kg	0.00022 %	✓	
		004-003-00-8	215-133-1	1304-56-9									
12		boron { ● boron tribromide/trichloride/trifluoride (combined) }				0.6	mg/kg	13.43	7.172	mg/kg	0.000717 %	✓	
				10294-33-4, 10294-34-5, 7637-07-2									
13		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
14		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				26	mg/kg	1.462	33.82	mg/kg	0.00338 %	✓	
			215-160-9	1308-38-9									
15		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
16		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		27	mg/kg	1.126	27.055	mg/kg	0.00271 %	✓	
18		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
19		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	●	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
22	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
23	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
24		lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	31	mg/kg		27.59	mg/kg	0.00276 %	✓	
25		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
26		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
27		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		27	mg/kg	1.579	37.955	mg/kg	0.0038 %	✓	
28	●	pH			PH		8	pH		8	pH	8pH		
29	●	phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
30	●	pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
31		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
33	●	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
34		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
35		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		73	mg/kg	1.245	80.869	mg/kg	0.00809 %	✓	
36	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
37		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		32	mg/kg	1.785	50.842	mg/kg	0.00508 %	✓	
38		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.03 %		

Key

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

Classification of sample: WS103-4-25082021-1.00

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

Sample details

Sample name:		LoW Code:	
WS103-4-25082021-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
16% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14	mg/kg	1.32	15.527	mg/kg	0.00155 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1	mg/kg	2.775	2.331	mg/kg	0.000233 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.2	mg/kg	13.43	2.256	mg/kg	0.000226 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		42	mg/kg	1.462	51.564	mg/kg	0.00516 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
15		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13	mg/kg	1.126	12.295	mg/kg	0.00123 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19	●	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	15	mg/kg		12.6	mg/kg	0.00126 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		29	mg/kg	1.579	38.477	mg/kg	0.00385 %	✓	
26	●	pH			PH		7.8	pH		7.8	pH	7.8 pH		
27	●	phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
28	●	pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		48	mg/kg	1.245	50.187	mg/kg	0.00502 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		49	mg/kg	1.785	73.478	mg/kg	0.00735 %	✓	
											Total:	0.0267 %		

Key

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

Classification of sample: BH104-1-20082021-0.50

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

Sample details

Sample name:		LoW Code:	
BH104-1-20082021-0.50		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
16% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		601-020-00-8	200-753-7	71-43-2									
2	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		601-023-00-4	202-849-4	100-41-4									
3		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		601-021-00-3	203-625-9	108-88-3									
4	●	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
				TPH									
5		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
6		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		603-181-00-X	216-653-1	1634-04-4									
										Total:	0.001 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
<LOD	Below limit of detection
ND	Not detected

Appendix A: Classifier defined and non CLP determinands

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

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

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

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

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

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

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

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

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

Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride
Data source: N/A
Data source date: 06 Aug 2015
Hazard Statements: EUH014 , Acute Tox. 2 H330 , Acute Tox. 2 H300 , Skin Corr. 1A H314 , Skin Corr. 1B H314

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

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

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

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

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

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

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

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

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

lead compounds with the exception of those specified elsewhere in this Annex

CLP index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers many simple lead compounds to be Carcinogenic category 2
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

pH (CAS Number: PH)

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

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

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

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

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

monohydric phenols (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Acute Tox. 3 H301 , Acute Tox. 3 H311 , Acute Tox. 3 H331 , Skin Corr. 1B H314 , Skin Corr. 1B H314 >= 3 %, Skin Irrit. 2 H315 1 £ conc. < 3 %, Eye Irrit. 2 H319 1 £ conc. < 3 %, Muta. 2 H341 , STOT RE 2 H373 , Aquatic Chronic 2 H411

magnesium phosphide; trimagnesium diphosphide (EC Number: 235-023-7, CAS Number: 12057-74-8)

CLP index number: 015-005-00-3
Description/Comments:
Data source: Commission Regulation (EU) No 944/2013 - 5th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP5)
Additional Hazard Statement(s): Water-react. 1 H260 >= 0.3 %, EUH032 >= 0.3 %, EUH029 >= 0.3 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - Water-react. 1 H260 >= 0.3 % hazard statement sourced from: WM3, Table C3.2
14 Dec 2015 - EUH032 >= 0.3 % hazard statement sourced from: WM3, Table C12.2
14 Dec 2015 - EUH029 >= 0.3 % hazard statement sourced from: WM3, Table C12.2

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

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

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

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

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

beryllium {beryllium oxide}

Worst case species based on hazard statements

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

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

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

Worst case species based on hazard statements

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

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

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

Worst case species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

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

Worst case species based on hazard statements

zinc {zinc oxide}

Worst case species based on hazard statements

vanadium {divanadium pentaoxide; vanadium pentoxide}

Worst case species based on hazard statements.

magnesium {magnesium phosphide; trimagnesium diphosphide}

Worst case species based on hazard statements.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2021.246.4869.9247 (05 Sep 2021)
HazWasteOnline Database: 2021.246.4869.9247 (05 Sep 2021)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2019 - UK: 2019 No. 720 of 27th March 2019
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
POPs Regulation 2019 - Regulation (EU) 2019/1021 of 20 June 2019

WAC Data

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Analytical Report Number : 21-95910

Project / Site name:	Garth Wymott 2	**Samples received on:**	31/08/2021
Your job number:	19851	**Samples instructed on/ Analysis started on:**	31/08/2021
Your order number:	PO09538	**Analysis completed by:**	06/09/2021
Report Issue Number:	1	**Report issued on:**	06/09/2021
Samples Analysed:	2 10:1 WAC samples		

Signed: Karoline Marek

Karolina Marek
PL Head of 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.

Waste Acceptance Criteria Analytical Results

Report No:	**21-95910**						
					Client:	**HYDROCK**	
Location	**Garth Wymott 2**						
Lab Reference (Sample Number)	1990713 / 1990714				**Landfill Waste Acceptance Criteria** **Limits**		
Sampling Date	26/08/2021				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH107A 1						
Depth (m)	0.40						
Solid Waste Analysis							
TOC (%)**	3.2				3%	5%	6%
Loss on Ignition (%) **	8.7				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	3.34				100	--	--
pH (units)**	8.1				--	>6	--
Acid Neutralisation Capacity (mol / kg)	2.6				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l			mg/kg			
Arsenic *	0.0042			0.0357	0.5	2	25
Barium *	0.0293			0.246	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0012			0.010	0.5	10	70
Copper *	0.013			0.11	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0022			0.0185	0.5	10	30
Nickel *	0.0066			0.056	0.4	10	40
Lead *	0.0038			0.032	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0071			0.059	4	50	200
Chloride *	2.5			21	800	15000	25000
Fluoride	1.1			9.2	10	150	500
Sulphate *	8.9			75	1000	20000	50000
TDS*	94			790	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	16.2			136	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.2						
Dry Matter (%)	88						
Moisture (%)	12						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation
** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results

Report No:	**21-95910**						
					Client:	**HYDROCK**	
Location	**Garth Wymott 2**						
Lab Reference (Sample Number)	1990715 / 1990716				**Landfill Waste Acceptance Criteria** **Limits**		
Sampling Date	27/08/2021				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	SA105 1						
Depth (m)	0.30-0.50						
Solid Waste Analysis							
TOC (%)**	1.6				3%	5%	6%
Loss on Ignition (%) **	4.8				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.2				--	>6	--
Acid Neutralisation Capacity (mol / kg)	3.6				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0062			0.0500	0.5	2	25
Barium *	0.0296			0.238	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0014			0.011	0.5	10	70
Copper *	0.011			0.089	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	< 0.0004			< 0.0040	0.5	10	30
Nickel *	0.0086			0.070	0.4	10	40
Lead *	0.0053			0.043	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.033			0.27	4	50	200
Chloride *	2.3			19	800	15000	25000
Fluoride	0.47			3.7	10	150	500
Sulphate *	7.2			58	1000	20000	50000
TDS*	64			510	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	15.7			126	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	90						
Moisture (%)	9.8						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.					*= UKAS accredited (liquid eluate analysis only)		
Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation					** = MCERTS accredited		

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Analytical Report Number : 21-95910
Project / Site name: Garth Wymott 2

* 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 *
1990713	BH107A	1	0.4	Brown loam and clay with gravel and vegetation.
1990715	SA105	1	0.30-0.50	Brown clay and loam with gravel and vegetation.

Analytical Report Number : 21-95910
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance""	L046-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated WAC-17 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. MCERTS accredited except Coronene.	L064-PL	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	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
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
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Total BTEX in soil (Poland)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073-PL	W	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by EC probe using a factor of 0.6.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025

Analytical Report Number : 21-95910
Project / Site name: Garth Wymott 2

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE

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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Appendix G Preliminary Geotechnical Risk Register

Geotechnical Hazard Identification – Desk Study Stage

Potential geotechnical hazards have been assessed in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The following pages set out the identified geotechnical risks and hazards which are associated with the proposed development and establish the approach which is to be taken to manage the risks including the geotechnical input and analysis.

Table J.1 is a preliminary assessment of possible geotechnical hazards at the site at Desk Study stage. This information is used to assist with ground investigation design.

Table J.1: Possible geotechnical hazards

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Uncontrolled Made Ground (variable strength and compressibility).	Associated with infilled pond and former buildings.	✓	-
Soft / loose compressible ground (low strength and high settlement potential).	Associated with organic backfill within infilled pond.	✓	-
Shrink swell of the clay fraction of soils under the influence of vegetation.	Clay soils underlie the site and mature trees present onsite.	✓	-
Variable lateral and vertical changes in ground conditions.	Potential for within heterogenous Made Ground.	✓	-
High sulphates present in the soils.	Made Ground present across the site may contain elevated sulphates.	✓	-
Adverse chemical ground conditions, (e.g. expansive slag).	Unlikely to be present.	-	✓
Obstructions.	Associated with former buildings.	✓	-
Existing below ground structures to remain (existing prison fence line).	Perimeter fence to remain with development in close proximity.	✓	-
Shallow groundwater.	Potential for shallow perched water which may vary in depth seasonally.	✓	-
Changing groundwater conditions.		✓	-
Risk from erosion.	Unlikely to be present.	-	✓
Risk from flooding.	A flood zone 3 encroaches onto the west of the site.	✓	-
Loose Made Ground, leading to difficulty with excavation and collapse of side walls.	Granular Made Ground may be loosely compacted.	✓	-
Slope stability issues – general slopes.	Unlikely to be present.	-	✓
Slope stability issues – retaining walls.	Unlikely to be present.	-	✓

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Earthworks – settlement (due to placement of fill on soft / loose ground).	Unlikely to be present.	-	✓
Earthworks – poor bearing capacity of new fill.	Unlikely to be present.	-	✓
Earthworks – unsuitability of site won material to be reused as fill.	Unlikely to be present.	-	✓
Solution features in Chalk.	Unlikely to be present.	-	✓
Cavities in the Superficial Deposits due to solution features.	Unlikely to be present.	-	✓
Dissolution (associated with “wet rock head”).	Unlikely to be present.	-	✓
Brine extraction.	Unlikely to be present.	-	✓
Mining.	Unlikely to be present.	-	✓
Cambered ground with gulls possibly present.	Unlikely to be present.	-	✓
Relict Slip Surfaces.	Unlikely to be present.	-	✓
Solifluction.	Unlikely to be present.	-	✓
Problematic soils (silts and rewetting etc.).	Unlikely to be present.	-	✓

Geotechnical Hazard Identification – Following Ground Investigation

The preliminary Geotechnical Risk Register following Ground Investigation is set out in Table J.3.

The probability and impact of a hazard have been judged on a qualitative scale as set out in Table J.2. The degree of risk (R) is determined by combining tan assessment of the probability (P) of the hazard occurring with an assessment of the impact (I) of the hazard and associated mitigation it will require if it occurs (R = P x I).

Table J.2: Qualitative assessment of hazards and risks

P = Probability			I = Impact			R = Risk Rating (P x I)	
1	Very unlikely (VU)		1	Very Low		1 – 4	None / negligible
2	Unlikely (U)		2	Low		5 – 9	Minor
3	Plausible(P)		3	Medium		10 – 14	Moderate
4	Likely (Lk)		4	High		15 – 19	Substantial
5	Very Likely (VLk)		5	Very High		20 - 25	Severe

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Uncontrolled Made Ground (variable strength and compressibility).	Deep Made Ground >3.45m present adjacent to the existing boiler house. Deep Made Ground present in the north associated with the backfilled pond and in the east associated with former construction. Some peaty clays present within the backfilled pond which could be subject to secondary consolidation.	Prison Blocks	Bearing capacity failure, settlement (total and differential).	3	4	12	Design foundations to found below Made Ground or base of backfilled pond.
			Floor slab failure.	3	4	12	Design floor slabs as suspended.
		Roads and Pavements.	Settlement (total and differential) of roads and pavements.	3	2	6	Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate. If anticipated settlements are significant, and cannot be mitigated by design, over-excavate and replace soft soils.
		Services.	Settlement (differential), causing damage to services.	2	2	4	Settlements are not anticipated to be significant with regard to services. No additional design requirements envisaged.
		Landscaped areas	Settlement (differential), in gardens.	2	2	4	It is unlikely that settlements will be significant with regard to landscaped areas.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	3	3	9	Where soft spots encountered, over-excavation and replacement with suitable fill. Outline design of working platform to include geo-grid. Site inspection and watching brief by Contractor to review working platform frequently and regularly.
Shrinkage / swelling of the clay fraction of soils under the influence of vegetation.	The clays of the Head and Glacial Till are medium heave potential.	Foundations.	Shrinkage or heave of soils and associated damage to foundations.	4	3	12	Design foundations in accordance with BRE Digest 240. Deepen foundations due to trees as appropriate.
		Floor slabs.	Floor slab failure.	3	4	12	Design floor slabs in accordance with BRE Digest 240. Design floor slab as suspended with a void, unless the warranty provider is satisfied the soil is not desiccated, or slabs are constructed when soils are not seasonally desiccated (i.e. during winter and spring).

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Variable lateral and vertical changes in ground conditions.	The Made Ground soils vary laterally and vertically, both in composition and strength. The Head Deposits vary vertically with some firmer clays underlying stiff clay or horizons of sands or silty clays.	Prison Blocks	Foundation bearing capacity failure, settlement (total and differential).	3	4	12	Design foundations to found below Made Ground or base of backfilled pond or softer/firmer head deposits for heavier loaded structures.
			Floor slab failure.	3	4	12	Design floor slab as suspended.
		Roads and Pavements.	Settlement (total and differential), of roads and pavements.	3	2	6	Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate. If anticipated settlements are significant, and cannot be mitigated by design, over-excavate and replace unsuitable soils.
		Services.	Settlement (differential), causing damage to services.	2	2	4	Settlements are not anticipated to be significant with regard to services. No additional design requirements envisaged.
		Landscaped areas	Settlement (differential), in gardens.	2	2	4	It is unlikely that settlements will be significant with regard to landscaped areas.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	3	3	9	Where soft spots encountered, over-excavate and replace with suitable fill. Design working platform to suit the ground conditions. Outline design of working platform to include geo-grid if necessary. Site inspection and watching brief by Contractor to review working platform frequently and regularly.
Sulphates present in the soils.	The ground investigation has proven that there is the potential for expansive sulphate bearing soils to be present. Head deposits classified as DS-2 AC-2.	Attack of buried concrete.	Damage to concrete and reduction in strength.	3	4	12	Classify concrete in accordance with BRE SD1 and design concrete accordingly.
		Earthworks.	Sulphate heave following the use of hydraulic binders.	2	4	8	Supplementary sulphate testing in accordance with BRE guidelines to be undertaken during earthworks. Before the use of hydraulic binders is approved, comprehensive testing and design will need to be completed by a Specialist Contractor to satisfy both themselves and the Engineer of the suitability of the soils for treatment, and confirm that the requisite end-performance of the material is achievable.

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Obstructions.	Obstructions have been proven by the investigation and there is a potential for additional obstructions to be present due to historical construction activity, or unknown fill in Made Ground.	Construction staff, vehicles and plant operators.	Risk of collapse of excavation as obstructions are pulled out.	3	4	12	Undertake Enablement Works and remove all obstructions. Allow for a breaker to be present during construction and remove obstructions were encountered during construction.
		Roads and Pavements.	Hard spots in externals and roads / pavements.	2	2	4	
		Prison Blocks	Impact on piling, resulting in additional piles and re-design of foundations.	3	3	9	
Existing below ground structures to remain (prison fence line).	Development will take place close to the existing prison perimeter fence line.	Fence line	Foundation bearing capacity failure, settlement (differential).	3	4	12	Design to be undertaken in accordance with EC7. Contractor to appoint competent Temporary Works Designer to design temporary works, in accordance with BS 5975:2008+A1:2011. Temporary Works Design to include recommendations for inspection of excavations. No person entry to unsupported excavations.
Shallow groundwater.	Monitoring during the ground investigations has proven a shallow localised perched groundwater table. Post fieldwork monitoring recorded groundwater up to 0.40m bgl.	Construction staff, vehicles and plant operators.	Difficulty with excavation.	3	2	6	Contractor to appoint competent Temporary Works Designer to design temporary works, in accordance with BS 5975:2008+A1:2011. Temporary Works Designer to consider in their analysis the impact of, and requirements for, de-watering of excavations. Any water that collects at the base of excavations to be removed as soon as practicable.
			Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill.				

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Subject to risk from flooding.	The west of the site lies within a Flood Zone 3 associated with Wymott Brook.	West of the development.	Damage to prison blocks, landscaping areas, roads and services.	3	4	12	The site is partially located within a Flood Zone 3, and as such is at risk of flooding. The planning of the site needs to take into account the risk of flooding. Existing flood defences should be inspected and if necessary updated or replaced.
Unforeseen ground conditions - risk associated with limited data.	Ground investigation has been undertaken. However, additional information will be obtained during construction. Ground conditions are only defined at exploratory hole locations.	All aspects of the development		3	4	12	Designers to be contacted if conditions encountered are different to those identified during investigation. Regular inspections of excavations and earthworks for evidence of stability. Adequate investigation required to characterise the site and understand the potential risks.

Whilst the probability and impact of the hazard occurring can be reduced to a minimum by geotechnical design, the impact cannot be reduced below very low. The risk register will need to be up-dated, as necessary, to reflect design, additional information, data and experience as it is gained through the construction process.

Impacts of the design with regard to health and Safety considerations will need to be included by the designer at design stage.

Appendix H Plausible Source-Pathway-Receptor Contaminant Linkages

Summary of Potential Contaminant Linkages

Table K.2 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in LCRM (2019) and additional risk assessment is required.

Source – Pathway – Receptor Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland et al 2001) but modified to add a ‘no linkage’ category and to remove low/moderate risk (See Table K.1). Further information is given in the relevant Hydrock methodology, referenced in Appendix I, including descriptions of typical examples of probability and consequences.

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table K.1: Consequence versus probability assessment.

		Consequence			
Probability		Severe	Medium	Mild	Minor
	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Low risk	Very low risk
	Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
	Unlikely	Low risk	Very low risk	Very low risk	Very low risk
	No Linkage	No risk			

Table K.2: Exposure model – final source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
PAH hotspots within the Made Ground.	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	Shallow hotspots for PAHs (CBR101, WS111E, WS118E and WS123e) were encountered within the Made Ground. Mitigation measures required in the form of excavation, disposal and removal.
Hotspot of petroleum hydrocarbons within WS106E between 0.80m and 1.00m bgl.	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	Localised hotspot for petroleum hydrocarbons at WS106E between 0.80m and 1.00m bgl. Mitigation measures required in the form of excavation, disposal and removal.
Asbestos-containing materials in the Made Ground and at the surface.	Inhalation of fugitive dust.	Site users.	Likely	Severe	High	Localised hard/cement type asbestos was encountered within the Made Ground and on the surface east of the existing pavilion. As part of the enabling works any visible asbestos containing materials will require hand picking. The risk of significant generation of dust is likely only during site development process and can therefore be controlled. Suppression should be included in control measures. There is ACM present on site, so works to be undertaken in accordance with CAR 2012.
		Neighbours	Unlikely	Severe	Low	
Asbestos fibres from insulation or asbestos-containing materials in the buildings.	Inhalation of fugitive dust.	Site users	Likely	Severe	High	Asbestos may be present in existing buildings and in Made Ground. Careful removal will be required from buildings during demolition. However, removal under controlled conditions should limit release of fibres to the air and the ground.
		Neighbours.	Unlikely	Severe	Low	

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Unforeseen contamination below the existing farm buildings and those associated with the prison.	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	Farm and prison buildings are present onsite and the ground investigation was unable to target these specific areas. Post demolition it recommended that ground investigation is undertaken within these areas to confirm no active pathways are present. In particularly investigation should target areas of fuel or machinery store within the farm buildings. Further risk assessment required post supplementary ground investigation.
		Neighbours	Unlikely	Severe	Low	
TPH within shallow soils.	Direct contact	Site users.	Likely	Medium	Moderate	Localised areas in which hydrocarbon fractions exceeded the PE threshold. Subject to discussions with utility providers there may be a requirement for installation of “Protectaline” (or similar) pipework in specific areas of the site.
Bituminous bound hardstanding potentially containing coal tar.	Ingestion, inhalation or direct contact	Site users.	Likely	Medium	Moderate	Further investigation required to confirm classification of hardstanding for waste disposal especially within the existing prison car parks which are to be redeveloped.

Appendix I

Hydrock Methodologies

This report uses Hydrock Desk Study and Ground Investigation template V47.1.

This appendix provides additional background information on certain approaches and methods used by Hydrock Consultants Limited in the preparation of this report.

The following Hydrock Methodologies apply to this report. These are not included, but are available on request by quoting the methodology reference, revision and date.

Reference	Name	Revision	Date
001	Desk Study	001	30/07/2018
002	Ground Investigation	001	30/07/2018
003	Preliminary Geo-environmental Risk Assessment Rationale	001	30/07/2018
004	Preliminary geotechnical Risk Register	001	30/07/2018
005	Generic Risk Assessment for Human Health (Soils)	001	30/07/2018
006	Generic Risk Assessment for Pollution of Controlled Waters	001	30/07/2018
008	Generic Risk Assessment for Risk to Plants	001	30/07/2018
009	Generic Risk Assessment for Water Supply Pipes	001	30/07/2018
010	Generic Ground Gas Risk Assessment	001	30/07/2018
011	Determination of Contaminated Land Under Part 2A of the Environmental Protection Act 1990	001	30/07/2018
012	Waste Management	001	30/07/2018
013	Materials Management	001	30/07/2018
014	Asbestos in Soils	001	30/07/2018
015	Remediation and Mitigation (New Methodology)	001	30/07/2018
016	Geotechnical Categorization and Characteristic Design Values	001	30/07/2018
017	Foundation and Floor Slab Recommendations - Residential	001	30/07/2018
018	Foundation and Floor Slab Recommendations – Commercial / Distribution	001	30/07/2018
019	Earthworks Suitability Recommendations	001	30/07/2018
020	Pavements and Pavement Foundations	001	30/07/2018
023	Sulphate Recommendations	001	30/07/2018