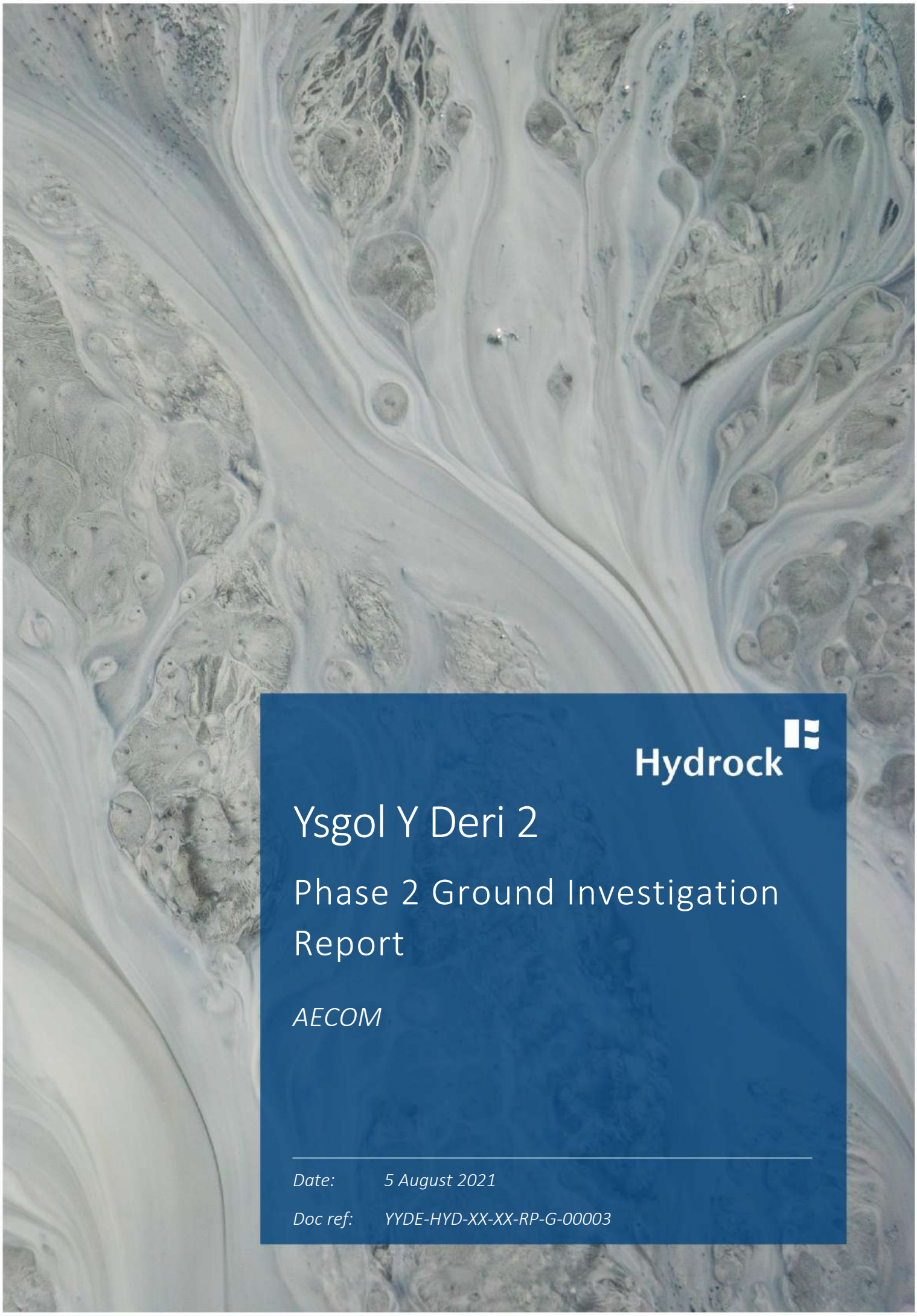

Hydrock

Ysgol Y Deri 2

Phase 2 Ground Investigation Report

AECOM

Date: *5 August 2021*

Doc ref: *YYDE-HYD-XX-XX-RP-G-00003*

DOCUMENT CONTROL SHEET

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S2	P1	18/06/2021	Final
S2	P2	05/08/2021	Update to Ground Gas sections following completion of monitoring.

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EXECUTIVE SUMMARY

SITE INFORMATION AND SETTING	
Objectives	The works have been commissioned to support the planning application and to assist with the design of the development.
Client	AECOM
Site name and location	Ysgol Y Deri 2, off Lavernock Road, Cosmeston, nearest postcode CF64 5UP.
Proposed development	The site development proposals are understood to comprise a new primary school with associated hard and soft landscaping, sports pitches and car parking.
GROUND MODEL	
Desk study summary	The desk study has already been undertaken and the results of this were reported in Hydrock report YYD-HYD-XX-XX-RP-GE-0002 issued 20th November 2020. The initial ground model developed from the desk study is described in this report and is summarised below; The site currently comprises a field of pastoral land off Lavernock Road surrounded by hedgerows and trees with Lower Cosmeston Farm to the immediate north east. The site is approximately 2.4 ha in area and slopes down from an elevation of 20m AOD in the south to 12m AOD in the north. It is around 75m to the south of Sully Brook. A review of historical Ordnance Survey mapping indicates that there is no prior use for the site other agricultural activities. There was a railway station and small goods yard around 150m to the south west of the site until the 1960s. There is also a former landfill site located around 110m to the east of the site. A non-specialist UXO assessment indicates a moderate bomb risk. A full UXO desk study indicates a medium risk for the site and will require mitigation measures for site investigation and construction. The geology at the site consists of limestone and mudstone of the St Mary's Well Bay Member across the northern half of the site with marine mudstones of the Lavernock Shales Member underlying the southern half of the site. The St Mary's Well Bay Member is classed as a Secondary A Aquifer. The site is not within a Source Protection Zone and there are no groundwater abstractions located within 500m of the site boundary.
Ground and groundwater conditions encountered by investigation	The ground conditions as proven by the investigation undertaken at the site comprise: • Topsoil – between from ground level to between 0.2m and 0.3m below ground level (bgl), comprising a firm dark brown silty CLAY with rootlets; over *In the northern part of the site.* • Weathered St Mary's Well Bay Member – from the base of the topsoil to between 0.85m and 1.20m bgl, generally comprising a firm to stiff orangish brown and grey gravelly CLAY; over • St Mary's Well Bay Member – from the base of the weathered material to a depth of at least 5.7m bgl (base not proven), comprising thin medium strong LIMESTONE beds interbedded with thin very weak to weak MUDSTONE beds. *In the southern part of the site.* • Weathered Lavernock Shale – from the base of the topsoil to depths of between 0.90m and 1.70m bgl, comprising a firm orangish brown CLAY; over • Lavernock Shale – from the base of the weathered material to a maximum depth of 1.70m bgl (base not proven), generally comprising an extremely weak thickly laminated MUDSTONE.

	Groundwater was encountered at depths between 0.40m bgl and 1.65m bgl during the investigation. Water levels recorded post-fieldwork ranged from 0.20m bgl to 3.03m bgl. There is shallow groundwater in the St Mayr's Well Bay Member which at the time of the investigation (following an extremely wet period) was partially confined beneath the clay of the weathered material. Only minor strikes were noted in the Lavernock Shale which is considered to be a less permeable unit.
GEOTECHNICAL CONCLUSIONS	
Conclusions of geotechnical assessment	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 the un-weathered limestone of the St Mary's Well Bay Member. Significant collapse of trial pit faces was noted following trial pit excavation. This was noted in pits excavated through the St Mary's Well Bay Member where the weathered horizon continued to considerable depths. Water seepages into excavations from the St Mary's Well Bay Member are unlikely to be adequately controlled by sump pumping and alternative methods of dewatering are likely to be required. Foundations are recommended to comprise a 1m wide strip foundation or 2m square pad foundation. Allowable net bearing pressure of 250kN/m² should be available for both types of foundation. Foundations may need to be deepened to below the depth of influence of trees from desiccation effects and roots unless founded directly onto competent un weathered rock. Suspended floor slabs are recommended due to the presence of high shrinkage potential clay soils. A design CBR of 5% is recommended. Soakaway drainage is considered unsuitable for this site. Design Sulfate Class - DS-1 and ACEC Class AC-1. Equivalent to Design Chemical Class DC-1 for a 50 year design life.
GEO-ENVIRONMENTAL CONCLUSIONS	
Conclusions of contamination Generic risk assessment	Human health: • Exceedances of PAH in topsoil in the vicinity of TP01 with one further minor exceedance in topsoil in the vicinity of SA03. Plant growth: • No unacceptable risk to plant growth. Controlled Waters: • No unacceptable risk to controlled waters. Ground gases or vapours: • Low risk from ground gases and CS1 conditions apply based on current monitoring. Radon: • The site is in a Radon Affected Area, on part of the site 5-10% of existing homes are affected, therefore basic radon protection measures will be required in the new school building. Water supply pipes: • Standard pipework is envisaged. 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: • Installation of basic radon protection measures.

	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 may 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.
FUTURE CONSIDERATIONS	
Further work	Following the ground investigation works undertaken to date, the following further works will be required: • one day of hand pitting and chemical testing around TP01 to delineate the area of contaminated topsoil (this has now been completed, please refer to the letter report (YYD-HYD-XX-XX-RP-GE-0004_S0_P1); • specialist UXO/UXB risk assessment in accordance with CIRIA Report C681 with regard to construction risk; • 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; • production of a Remediation Strategy (if required following discussion with regulatory bodies). • production of a Materials Management Plan relating to reuse of soils at the site (if required); • remediation and mitigation works (if required); and • verification of the remediation and mitigation works (if required).

This Executive Summary forms part of Hydrock Consultants Limited report number YYD-HYD-XX-XX-RP-GE-0003 and should not be used as a separate document.

1. INTRODUCTION

1.1 Terms of reference

In April 2021, Hydrock Consultants Limited (Hydrock) was commissioned by AECOM (the Client) to undertake a Phase 2 ground investigation at a site off Lavernock Road, Cosmeston. The nearest postcode is CF64 5UP with the National Grid Reference for the site 317859E, 168833N see Site Location Plan in Appendix A. Hydrock undertook a Phase 1 Ground Conditions Desk Study which was issued on 20th November 2020 (ref; YYD-HYD-XX-XX-RP-GE-0002). The Phase 1 Ground Conditions Desk Study should be read in conjunction with this report.

The site is currently rough pastoral land which does not appear to currently be in use.

Hydrock understands that the proposed development is to comprise a primary school with associated hard and soft landscaping, sports pitches and car parking. A proposed development layout (HLM Architects Drawing YD2-HLM-00-00-DR-L-00004), is presented in Appendix A

The works have been undertaken in accordance with Hydrock's proposal referenced (C-17379 – Ysgol Y Deri 2, 24th February 2021) and the Client's instructions to proceed (via email from Conna Ryan on 20th April 2021).

1.2 Objectives

The works have been commissioned to support the planning application and to assist with the design of the development.

The objective of the Phase 2 Ground Investigation is:

- to resolve uncertainties identified in the Phase 1 Desk Study (Hydrock report YYD-HYD-XX-XX-RP-GE-0002) by refining and updating the preliminary Ground Model, 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

This report includes a Phase 2 Ground Investigation the scope of which is as follows;

- a ground investigation including trial pitting, soakaway testing, rotary drilling and TRL DCP testing 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;
- geotechnical and chemical laboratory analysis;
- updating of the preliminary Ground Model;

- preparation of a geotechnical risk register;
- presentation of an initial geotechnical design recommendations;
- formulation 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 Client for use in the preparation of this report:

- HLM Architects. February 2021. 'Ysgol Y Deri Primary School – Proposed Site Layout (Alternative)',

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

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'.

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 8 and Section 9.

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

2. OUTLINE CONCEPTUAL MODEL

2.1 Introduction

The outline Conceptual Model (oCM) incorporates evidence from the site walkover and desk study as reported in Hydrock's Phase 1 Ground Conditions Desk Study report YYD-HYD-XX-XX-RP-GE-0002. 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.

2.2 Ground model

The preliminary ground model presented in the Phase 1 Ground Conditions Desk Study Report provides an understanding of the ground conditions and is the basis for preparing the preliminary geotechnical hazard assessment (Section 2.3) and the preliminary geo-environmental exposure model (Section 2.4).

The findings of the Phase 1 report can be briefly summarised as follows;

- The site currently comprises a field of pastoral land off Lavernock Road surrounded by hedgerows and trees with Lower Cosmeston Farm to the immediate north east. It is approximately 2.4 ha in area and slopes down from an elevation of 20m AOD in the south to 12m AOD in the north. It is around 75m to the south of Sully Brook.
- Historical Ordnance Survey mapping indicates that there is no prior use for the site other agricultural activities. There was a railway station and small goods yard around 150m to the south west of the site until the 1960s. There is also a former landfill site located around 110m to the east of the site.
- The geology at the site consists of limestone and mudstone of the St Mary's Well Bay Member across the northern half of the site with marine mudstones of the Lavernock Shales Member underlying the southern half of the site.
- The St Mary's Well Bay Member is classed as a Secondary A Aquifer. The site is not within a Source Protection Zone and there are no groundwater abstractions located within 500m of the site boundary.
- The site is located within a radon affected area where new buildings will require basic radon protection measures.

2.3 Geotechnical hazard identification

2.3.1 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 H.1 in Appendix H for further information).

2.3.2 Plausible geotechnical hazards

Plausible geotechnical hazards identified at the site are:

- 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.
- Shallow groundwater.
- Changing groundwater conditions.
- Slope stability issues – general slopes change in elevation across the site.
- Unexploded Ordnance - due to medium risk of UXO on site.
- Earthworks – unsuitability of site won material to be reused as fill due to the potential for high plasticity soils in the weathered bedrock.

2.3.3 Potential development elements affected

Development elements potentially affected by geotechnical hazards are:

- Buildings – foundations.
- Buildings – floor slabs
- Roads and pavements.
- Services.
- General slopes
- Soft landscaping.
- 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.

2.4 Geo-environmental exposure model

2.4.1 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.

2.4.2 Potential contaminants

For the purpose of this assessment the potential contaminants have been separated according to whether they are likely to have originated from an on-site or off-site source.

Potential on-site sources of contamination

- Hydrocarbon fuels and lubricant contamination from spillage (i.e farm vehicle use) and associated vapours(S01).
- Fertilisers and/or pesticides used during agricultural work at the site (S02).
- Radon (S03).

Potential off-site sources of contamination

- Contaminants associated with the former railway to the immediate south of the site and the station and goods yard approximately 150m to the southwest of the site, possibly including metals, metalloids, PAHs, petroleum hydrocarbons and lubricants (S04).
- Ground gases (carbon dioxide and methane) from organic materials in the former landfill site 110m to the east (S05).
- Above ground slurry tank in Lower Cosmeston Farm (S06).

2.4.3 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 St Mary's Well Bay Member (R03).
- Surface water: drainage ditch on eastern boundary and Sully Brook 75m north of the site (R04).

2.4.4 Potential pathways

The following potential pathways have been identified.

- Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).
- Methane, Carbon Dioxide and Radon ingress via permeable soils and/or construction gaps (P02).
- Migration of contaminant via leachate migration through the unsaturated zone in the St Mary's Well Bay Member and Lavernock Shales Formation (P03).
- Migration of contaminant through the groundwater towards surface water in the vicinity of Sully Brook and from off site sources (the slurry tank) into the groundwater at the site. (P04).
- Surface water via overland flow and drainage network (P05).

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. An outline Conceptual Site Model is presented as Hydrock drawing 17379-HYD-XX-XX-DR-GE-1001 in Appendix A of this report.

3. GROUND INVESTIGATIONS

3.1 Investigation rationale

The ground investigation rationale was based on the findings of the preliminary risk assessment and is summarised in Table 3.1.

Table 3.1: Investigation rationale

Location	Purpose
RH01 – RH02	To assess deeper ground conditions within proposed building footprint 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.
RH03	Open hole for installation of gas pipe.
TP01 - 02	To assess shallow ground conditions in proposed building footprint and correlate with boreholes. To allow collection of samples for geotechnical and geo-environmental purposes. To allow in-situ assessment of shear strength using shear vane.
TP03 - 07	To assess shallow ground conditions outside proposed building footprint. To allow collection of samples for geotechnical and geo-environmental purposes. To allow in-situ assessment of shear strength using shear vane.
SA01 - 04	To assess shallow ground conditions outside proposed building footprint. To allow collection of samples for geotechnical and geo-environmental purposes. To enable infiltration testing.
SA01a, SA03a and SA04a	To enable infiltration testing at 0.5m bgl due to unstable trial pit adjacent.
DCP01 - 06	To enable derivation of CBR values for pavement design.

3.2 Constraints

Three of the soakaway pits (1,3 and 4) were unstable and therefore soakaway testing had to be undertaken in a shallow 0.5m deep trial pit adjacent to the pit described on the logs. These trial pits have been named SA01a, SA03a and SA04a.

3.3 Site works

The fieldwork took place between 18th and 21st May and is summarised in Table 3.2. The ground investigation locations were surveyed in using a Total Station GPS survey instrument and are shown on the Exploratory Hole Location Plan (Hydrock Drawing 17379-HYD-XX-XX-DR-GE-1004) in Appendix A. Note that as no georeferenced CAD file was provided to Hydrock the positions marked on the exploratory hole plan are an approximation of the true position based upon comparison with site features.

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

The weather conditions during the Hydrock fieldwork and for the previous week were cool and unseasonably wet.

Table 3.2: Summary of site works

Activity	Method	No.	Depth Range (m bgl)	*In situ* tests	Notes (e.g. installations)
Drilling, Pitting and Probing					
Boreholes	Rotary cored	2	5.50 – 5.70	SPT	50mm standpipe with gas tap.
	Rotary open hole	1	5.50		50mm standpipe with gas tap.
Trial pits	Machine (JCB 3X)	11	0.75 – 1.90	Hand shear vane (HSV)	SA01 to SA04 for the purpose of infiltration testing. Depth of trial pit refused due to shallow bedrock.
Probes	TRL dynamic cone penetrometer	6	0.55 – 0.86	California Bearing Ratio (CBR)	

Wells for monitoring groundwater levels and ground gas concentrations, were installed in all of the rotary boreholes. A summary of the monitoring well installations is presented in Table 3.3.

Table 3.3: Summary of monitoring installations

Location	Ground level (m OD)	Standpipe diameter	Screen top and base depth (m bgl)	Screen top and base elevation (m OD)	Strata targeted
RH01	14.81	50	0.50 – 5.50	14.31 – 9.31	St Mary's Well Bay Member
RH02	15.79	50	1.20 – 5.70	14.59 – 10.09	St Mary's Well Bay Member
RH03	17.27	50	1.00 – 5.50	16.27 – 11.77	Bedrock

3.4 Geo-environmental testing

3.4.1 Sampling strategy and protocols

Exploratory hole positions were determined by reference to the site conditions and uncertainties identified in the Initial Conceptual Model.

No specific features were identified during the desk study as requiring targeted investigation and a reasonably even spacing was used. The slurry tank was initially considered to be a concern but upon access to the site it became clear that this had a large barred gate in its side and was incapable of holding slurry and therefore not considered to be a risk. 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.

3.4.2 Geo-environmental monitoring

Gas monitoring boreholes have been monitored on six occasions. The results are presented in Appendix E. Monitoring is complete and this report has been updated following the completion of the monitoring.

3.4.3 Geo-environmental laboratory analyses

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

The geo-environmental analyses undertaken on soils are summarised in Table 3.4.

Table 3.4: Geo-environmental analyses of soils

Determinand Suite	Topsoil	St Mary's Well Bay Member	Lavernock Shale
Hydrock minimum suite of determinands for solids*	6	5	2
Herbicide and Pesticide screen	5	-	-
*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), sulfide, pH, asbestos fibres, speciated polynuclear aromatic hydrocarbons (PAH, by GC-FID), total phenols and fraction of organic carbon			

The soils chemical test data are interpreted and assessed in Sections 6.3 and 6.4.

The geo-environmental analyses undertaken on leachates for testing undertaken by Hydrock are summarised in Table 3.5.

Table 3.5: Geo-environmental analyses of leachates.

Determinand Suite	Soil leachates
Hydrock minimum suite of determinands for waters	5

The groundwater chemical test data are interpreted and assessed in Section 6.5.

3.5 Geotechnical testing

The geotechnical tests undertaken by Hydrock are summarised in Table 3.6 and the test certificates are provided in Appendix D. Wherever possible, UKAS accredited procedures have been used.

Table 3.6: Summary of sample numbers for geotechnical tests

Test	Weathered St Mary's Well Bay Member	Weathered Lavernock Shale	Unweathered St Mary's Well Bay Member
Natural moisture content	6	1	-
Atterberg limits	6	1	-
Particle size distribution (sieve and sedimentation)	2	-	-

Test	Weathered St Mary's Well Bay Member	Weathered Lavernock Shale	Unweathered St Mary's Well Bay Member
Particle size distribution (sedimentation only)	3	1	-
Sulfate and aggressive chemical environment classification for buried concrete classification (full BRE SD1 suite)	3	4	-
Uniaxial Compressive Strength (UCS)	-	-	3

The geotechnical test data are summarised in Section 4.4 and interpreted in Section 5.

4. GROUND INVESTIGATION RECORDS AND DATA

4.1 Physical ground conditions

4.1.1 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 3 is used from this point forward.

Details of the Hydrock ground investigation works are provided in the logs in Appendix C, a summary of the ground model is presented in Table 4.1 and the individual strata are described in the sections below.

Table 4.1: Strata encountered

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Thickness (m) (range)	Thickness (m) (average)
Topsoil	0.00	0.20 – 0.30	0.20 – 0.30	0.25
Weathered St Mary's Well Bay Member	0.20 – 0.30	0.85 – 1.20	0.65 – 1.00	0.85
Weathered Lavernock Shale	0.20 – 0.30	0.90 – >1.70	0.70 – >1.60	0.80
St Mary's Well Bay Member	0.20 – 1.20	>5.70	>4.50	Not proven
Lavernock Shale	0.90 – 1.10	>1.70	>0.80	

*Only proven thicknesses taken into account in the average thickness.

The distribution of the St Mary's Well Bay Member and Lavernock Shale across the site is shown on Hydrock drawing 17379-HYD-XX-XX-DR-GE-1005 which is included in Appendix A. Based upon Hydrock logs and the geology shown on local mapping it is considered that the thickness of Lavernock Shale overlying the St Mary's Well Bay Member will not be significant although this was not proven in any of the exploratory holes undertaken as part of this investigation.

4.1.2 Topsoil

The entire site was found to be covered with topsoil. No Made Ground or other surface covering was encountered.

Topsoil was between 0.20m and 0.30m thick. The topsoil comprised a firm dark brown silty CLAY with rootlets.

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.

4.1.3 Weathered St Mary's Well Bay Member

Weathered St Mary's Well Bay Member was encountered underlying the topsoil in the northern part of the site. The Weathered St Mary's Well Bay Member is between 0.65m and 1.00m thick, with an average thickness of 0.85m.

This generally consisted of a firm to stiff orangish brown and grey gravelly CLAY.

4.1.4 Weathered Lavernock Shale

Weathered Lavernock Shale was encountered underlying the topsoil in the southern part of the site and has a minimum thickness of 0.70m and was proven in part of the site to be of a thickness of 1.60m.

This generally consisted of a firm orangish brown CLAY.

4.1.5 St Mary's Well Bay Member

The St Mary's Well Bay Member was encountered underlying the weathered material of the same unit in the northern part of the site and was proven to be at least 4.50m thick.

This generally consisted of thin medium strong LIMESTONE beds interbedded with thin very weak to weak MUDSTONE beds.

4.1.6 Lavernock Shale

The Lavernock Shale was encountered underlying the weathered material of the same unit in the southern part of the site and was proven to be at least 0.80m thick. Lavernock Shales are likely to be underlain by the St Mary's Well Bay Member at relatively shallow depth but this was not proven during the investigation as the trial pits excavated on the Lavernock Shale were not excavated to sufficient depth to reach the underlying St Mary's Well Bay Member.

This generally consisted of extremely weak thickly laminated MUDSTONE.

4.2 Groundwater

4.2.1 Groundwater observations and levels

Groundwater encountered during the investigation is listed in Table 4.2. A groundwater observation represents the depth at which groundwater was first observed and is likely to be deeper than the actual water table level at that location.

Table 4.2: Groundwater occurrence

Stratum	Date	Location	Fieldwork		Comment
			Groundwater observation (m bgl)	Rose to after 20 mins (m bgl)	
St Mary's Well Bay Member (Weathered and Un-weathered)	19/05/2021	SA01	1.15	-	Minor seepage.
		SA04	1.30	-	Seepage.
	20/05/2021	RH02	0.40	-	Significant inflow.
	21/05/2021	TP02	0.90	0.60	Significant inflow.
		TP07	0.70	-	Minor seepage.

Stratum	Date	Location	Fieldwork		Comment
			Groundwater observation (m bgl)	Rose to after 20 mins (m bgl)	
Lavernock Shale (Weathered and Un-weathered)	19/05/2021	TP04	1.65	-	Minor seepage.
	19/05/2021	SA03	1.60		Seepage.

Groundwater levels recorded during post-fieldwork monitoring are summarised in Table 4.3.

Table 4.3: Groundwater level data summary

Stratum	Date range	Location	Post-fieldwork monitoring	
			Depth to groundwater (range) (m bgl)	Groundwater elevation (range) (m OD)
St Mary's Well Bay Member	24/05/2021 – 02/08/2021	RH01	0.20 – 1.85	14.61 – 12.96
		RH02	0.20 – 3.03	15.59 – 12.76
		RH03	0.21 – 2.37	17.06 – 14.90

4.2.2 Infiltration tests

The results of the infiltration testing undertaken are summarised in Table 4.4. The results sheets are presented in Appendix C.

Testing was carried out in accordance with Hydrock's 1-day assessment methodology (see reference in Appendix J). This is in general accordance with BRE Digest 365 (BRE DG 2016) where infiltration rates allow three test runs during a working day (or where there is no infiltration), but where low infiltration rates were encountered the available time may not have been sufficient to fully comply with the BRE test method (i.e. three runs of the test).

Not that some of these tests were terminated early due to the pit wall collapsing. It was not considered worthwhile to attempt to fill the pits with gravel and retest as the water table was very high and therefore it is very unlikely that there would have been any infiltration.

Table 4.4: Infiltration test results

Stratum	Location	Depth to base of pit (m bgl)	Infiltration rate (m/s)
St Mary's Well Bay Member	SA01a	0.40	No infiltration
Weathered Lavernock Shale	SA02	1.75	
	SA03a	0.50	
St Mary's Well Bay Member	SA04a	0.60	

*Pits were designated (a) where a test had to be undertaken in a shallow adjacent pit due to the walls of the main pit collapsing when water was added.

4.2.3 Groundwater summary

In general groundwater was encountered at shallow depths during the ground investigation and although the weeks preceding the investigation were unseasonably wet it should be reasonably considered that groundwater will be similarly high during the winter months.

In a TP02 groundwater was observed rising very rapidly once the base of the weathered material was penetrated suggesting that the groundwater within the un-weathered limestone of the St Mary's Well Bay Member.

Only minor groundwater strikes were noted in the Lavernock Shales which is considered to be a less permeable unit than the St Mary's Well Bay Member.

4.3 Ground gases (carbon dioxide and methane)

Records from the gas monitoring boreholes are presented in Appendix E and summarised in Table 4.5.

All six monitoring visits have been undertaken. The data is assessed in Section 6.6.

Table 4.5: Range of ground gas data

Stratum	Methane (%)	Carbon dioxide (%)	Oxygen (%)	Steady flow rate (l/hr)	Comment
St Mary's Well Bay Member (RH01 & RH02)	0.0	0.2 – 4.3	8.7 – 20.8	0.0 – 0.2	All CO_2 readings below 5%. All CH_4 readings below 1% Wells completely flooded on first visit subsequent visits partial flooding of screened section of wells.
Lavernock Shale (RH03)	0.0	0.1 – 1.1	6.5 – 20.0	0.0 – 0.2	

4.4 Geotechnical data

4.4.1 Introduction

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

4.4.2 Plasticity

The volume change potentials in terms of NHBC Standard (Chapter 4.2) 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 4.6.

Table 4.6: Volume change potential

Stratum	No. of tests	Plasticity Index			Modified Plasticity Index			Plasticity designation	Volume Change Potential
		Min.	Max.	Av.	Min.	Max.	Av.		
Weathered St Mary's Well Bay Member	6	43	49	47	43	49	47	High – Very High	High
Weathered Lavernock Shale	1	43			43			High	High

4.4.3 Particle size distribution

Particle Size Distribution test (PSDs) results are summarised in Table 4.7 and summary descriptions and PSD plots of the material analysed are presented in Appendix D.

Table 4.7: PSD results summary

Stratum	No. of tests	Clay %	Silt %	Sand %	Gravel %	General description
Weathered St Mary's Well Bay Member	5	50 - 87	12 - 43	1 - 7	0 - 2	Slightly sandy locally slightly gravelly silty CLAY.
Lavernock Shale	1	78	20	2	0	Slightly sandy silty CLAY.

4.4.4 Soil strength

Table 4.8 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.

Table 4.8: Soil strength results and derived values

Stratum	No. of tests	SPT (N-value) (range)	c_u (kPa)	c' (kPa)	phi' (°)	Method
Weathered St Mary's Well Bay Member	2	24, 32	100, 135*	-	21#	SPT – rotary boreholes.
	1	-	80	-	-	Hand shear vane
Weathered Lavernock Shale	6	-	70 - 110	-	21#	Hand Shear Vane

*Correlation with Stroud (1975) based on 'average' plasticity
#Correlation with plasticity (BS8004:2015)

The weathered material across the site is consistently recorded as a stiff clay with a relatively low angle of friction due to the high plasticity. As the thickness of this material is limited to the near surface, weathered horizon (less than 1m in the building footprint) it is not considered meaningful to present a depth profile here.

4.4.5 Compressibility

Table 4.9 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 4.9: Summary of compressibility

Stratum	No. of tests / results	Method	Pressure range (kN/m^2)	Coefficient of volume compressibility (m_v) (m^2/MN)	Coefficient of consolidation (C_v) (m^2/yr)
Weathered St Mary's Well Bay Member	2	Correlation with SPT*	-	0.07 – 0.1	-

* An f_2 value of 0.42 has been used based on a plasticity index of 45. (Tomlinson (2001), after Stroud)).

4.4.6 Subgrade stiffness

The subgrade stiffness (CBR and Modulus of Subgrade Reaction) results are summarised in Table 4.10.

Table 4.10: CBR results and derived values

Stratum	No. tests	Method	CBR (%) (Range)
Weathered St Mary's Well Bay Member	6 Locations	*TRL Dynamic Cone Penetrometer*	18 - 96

4.4.7 Sulfate content

In accordance with BRE (Special Digest 1), the Design Sulfate (DS) classification and the Aggressive Chemical Environment for Concrete (ACEC) classification are presented in Table 4.11. The assessment summary sheets are presented in Appendix D.

Table 4.11: Aggressive chemical environment concrete classification

Stratum	No. tests	DS	ACEC
St Mary's Well Bay Member	4	DS-1	AC-1
Lavernock Shale	3	DS-1	AC-1

4.4.8 Intact material strength – rock

Table 4.12 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 D. Note also that rock mass properties, rather than intact rock material properties, may be more suitable for design purposes.

Table 4.12: Intact rock strength results and derived values

Stratum	No. of tests	UCS (MPa) (range)	Method
St Mary's Well Bay Member (Limestone Bands)	3	29 - 45	UCS test

Note that these results are considered to be representative of the most competent bands of limestone. The bands of mudstone are considered to be of considerably lower strength, in the range of 5 – 25 MPa although this is an estimate based upon sample description and there is no test data available for the mudstone.

4.4.9 Rock mass characteristics

The rock mass of the St Mary's Well Bay Member consists of very thin to thin interbedded limestone beds interbedded with very closely to closely spaced thickly laminated very thin to thin mudstone beds. The maximum fracture spacing is around 200mm and the average fracture spacing is around 40mm. The majority of the fractures are bedding planes.

5. GEOTECHNICAL ASSESSMENT

5.1 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.

The proposed development is to comprise a low-rise school building with associated hardstanding, soft landscaping and infrastructure. Although final levels have not yet been reviewed it is considered that limited cut / fill will be required.

Based on the above, for the purposes of this investigation, the proposed structures have been classed as Geotechnical Category 1 although this may be subject to change if more detailed proposals reveal complexity that was not initially apparent.

Following ground investigation and as part of the assessment provided in the following section, the preliminary geotechnical hazard identification undertaken in Section 2.3 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 preliminary Geotechnical Risk Register following investigation is provided in Appendix H (Table H.3) and will need to be updated during future design works.

5.2 Characteristic design values

For design of Category 1 structures in accordance with BS EN ISO 1997-1 (EC 7), the geotechnical parameters given in Table 5.1 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 4 and provided in Appendix C and Appendix D.

Table 5.1: 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	Uniaxial Compressive Strength MN/m²
	γ [a]	ϕ' [b]	c' [c]	c_u [d]	m_v [e]	k [f]
Weathered St Mary's Well Bay Member	18	21	5	80	0.09	-
Weathered Lavernock Shale	18	21	5	80	-	-
St Mary's Well Bay Member	23	28-	-	-	-	10

a. Estimated based on the recommendations of BS 8004-2015.

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	Uniaxial Compressive Strength MN/m²
	γ [a]	ϕ' [b]	c' [c]	c_u [d]	m_v [e]	k [f]

b. 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'.

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

d. Site measurements and laboratory data.

e. Stound and Butler SPT correlation.

f. Based upon sample description and uniaxial compressive strength testing.

5.3 Groundwork

5.3.1 Site preparation

The site is previously undeveloped and no buried man-made obstructions were encountered by this investigation. However, difficult excavation is anticipated where rock is present at shallow depth which is particularly relevant in the northern part of the site where the building is proposed and where limestone rock was encountered at depths of between 0.85 and 1.2m bgl.

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

5.3.2 Groundworks

Excavation of shallow soils should be readily undertaken by conventional plant and equipment. However, excavation through intact rock quality strata may require heavy-duty excavation plant and hydraulic breaking equipment.

Significant collapse of trial pit faces was noted following trial pit excavation. This was noted in pits excavated through the St Mary's Well Bay Member where the weathered horizon continued to considerable depths.

Random and sudden falls should be expected from the faces of near vertically sided excavations put down at the site.

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, site boundaries, 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 significant through the St Mary's Well Bay Member after periods of heavy rainfall. In these circumstances, groundwater control by sump pumping is unlikely to be sufficient to deal with anticipated flows and alternative methods of dewatering, such as well points, or use of impermeable cut-offs should be allowed for.

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.

5.3.3 Earthworks/reuse of site-won materials

At this stage, Hydrock is not aware of proposals for earthworks at the site.

Should earthworks be required, supplementary earthworks testing and an earthworks Specification will be necessary to ensure the appropriate management and reuse of the existing soils.

If significant earthworks are required, the works may be Category 2 in accordance with BS EN ISO 1997-1 (EC 7) and further geotechnical design may be necessary. 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 this office.

5.4 Slope stability

While there is a fall in elevation of around 2m from south to north across the site and it is likely that some slopes may be required Hydrock has not seen any proposals as to where slopes may be located and the magnitude of these slopes and therefore cannot provide meaningful comment at this stage.

5.5 Foundations

This section provides foundation recommendations for the proposed school as indicated on HLM Architects drawing YD2-HLM-00-00-DR-L-00004 which is included in Appendix A. No Structural loads have been provided at this point.

The recommendations in this report are based on BRE298 and the current NHBC Standards (2021).

The school proposed for the site is considered to Geotechnical Category 1. Preliminary foundation recommendations for the foundations presented in this section are based on the geotechnical parameters provided in Section 5.2.

The safe bearing pressures for foundations quoted for Category 1 structures in this report take into consideration traditional factors of safety against the risk of shear failure of the ground and should prevent undue or excessive total settlement.

Strip or trench fill foundations are considered suitable for the building and should be taken through the weathered St Mary's Well Bay Member and founded on competent limestone bedrock of the St Mary's Well Bay Member, found at 1.2m depth in RH01 and RH02 within the proposed building footprint.

It is possible that there be some shale on the southern edge of the proposed building footprint although if it is present, it will not extend to a significant depth. Any shale encountered in the foundation pits should be excavated and the foundations taken through to competent limestone bedrock.

A safe net bearing pressure of 250kN/m² is considered appropriate for a 1m wide strip foundation or a 2m square pad foundation, which will limit the total settlement to less than 25mm.

If enlarging the foundations is considered (for example because loads are such that the quoted safe net bearing pressure is inadequate and the foundation size needs to be increased this could lead to increased settlements and the above recommendations should be reviewed.

Foundations may need to be deepened to below the depth of influence of trees from desiccation effects and roots unless founded directly onto competent un weathered rock.

Where foundation depths are stepped, for instance to match changes in depths due to trees or changes in ground conditions (i.e. presence of Shale rather than limestone), the steps should be designed in accordance with the requirements of the NHBC Standards.

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.

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 a seasonally shallow groundwater table and excavations may be difficult to undertake. Alternative methods of groundwater control may be required as fast groundwater ingress is anticipated, which could result in unstable excavations.

5.6 Ground floor slabs

In accordance with the NHBC standards and BRE298, as clay soils of high-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 and advice/inspection sought from a Geotechnical engineer:

- 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).

Ground floor slabs should be designed to incorporate any gas protection measures that may be required, as discussed later within this report.

5.7 Roads and pavements

Based on the test results and subject to *in situ* testing during construction, it is considered likely an equilibrium CBR of 5% will be achievable over the majority of the site.

Proof rolling of the formation level will be required and any loose or soft spots should be removed and replaced with an engineered fill, in accordance with a suitable Specification. The formation level will also need to be protected during inclement weather from deterioration; all slopes should be trimmed to falls to shed rain water and the surface sealed to limit infiltration.

Prior to the placement of the founding materials and the construction of the road pavement, the sub-formation and formation will need to be inspected and checked in accordance with a suitable specification to ensure the ground conditions are as expected. All testing should be carried out in accordance with DMRB IAN 73/06 to confirm that the ground conditions at time of construction are consistent with the previous design parameters.

5.8 Drainage

Indicative infiltration rates for the ground investigation are presented in Appendix D and are summarised in Table 4.4.

Soakaways are considered unsuitable for the site based on no infiltration recorded from testing and high groundwater level noted during the investigation.

5.9 Buried concrete

Based on guidelines provided in BRE Special Digest 1 (BRE 2005) and the information presented in Section 4.4.7 (Table 4.11) the site soils can be classified as Design Sulfate Class DS-1 and ACEC Class AC-1 which equates to a Design Chemical Class of DC-1.

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

6. GEO-ENVIRONMENTAL ASSESSMENT

6.1 Updated conceptual model

6.1.1 Updated ground model

The preliminary ground model developed from the desk study and field reconnaissance survey (Section 2.4) has been updated using the findings of the ground investigation and is presented in Section 4. This ground model is the basis for the geo-environmental assessment presented in this section.

6.1.2 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.

Sources

The following potential sources have been removed from the exposure model.

- Contaminants associated with the former railway to the immediate south of the site and the station and goods yard approximately 150m to the southwest of the site, possibly including metals, metalloids, PAHs, petroleum hydrocarbons and lubricants as no Made Ground was observed at the site.
- Above ground slurry tank in yard of Lower Cosmeston Farm as the slurry tank has been altered such that it has clearly not been in use for a long time (large section of metal cut out of the site of the tank and wire gate installed).

Receptors

No potential receptors have been removed from, or added to, the exposure model.

Pathways

The following potential pathways have been removed from the exposure model;

- Methane ingress via permeable soils and/or construction gaps.
- Migration of contaminant via leachate migration through the unsaturated zone in the St Mary's Well Bay Member.
- Migration of contaminant through the groundwater towards surface water or groundwater on site.
- Surface water via overland flow and drainage network.

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

6.2 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 J.

The data sets used in the assessment comprise the analytical results obtained by Hydrock as listed in Section 3.

In cases where unacceptable risks are indicated, actions such as more advanced stages of risk assessment or remediation are proposed in Section 6.10.

6.3 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. However, we have also included screening sheets for end use of public open space, residential, in Appendix F which is more applicable for sports pitches where their use is not daily use/exposure.

There are no soil screening values for use in assessing the school 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 / or 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 F.

6.3.1 Averaging areas

The 'averaging area' used in this report is based on the conceptual model and the proposed development, and is taken to be the entire area of the site, with the data separated into Topsoil and natural soils.

6.3.2 Risk estimation

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 6.1.

Table 6.1: 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
Topsoil						
Benzo(a)anthracene	9.4	GAC	6	0.05	25	1
Benzo(a)pyrene	1.6	GAC	6	0.05	18	2
Benzo(b)fluoranthene	11	GAC	6	0.05	28	1
Chrysene	15	GAC	6	0.05	24	1
Dibenz(a,h)anthracene	1.4	GAC	6	0.05	3.5	1
Indeo(1,2,3,cd)pyrene	6.7	GAC	6	0.05	10	1
Natural Soil (excluding topsoil)						
No Exceedances						

Exceedances of 6 different PAH compounds (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenz(a,h)anthracene and indeo(1,2,3,cd)pyrene) were detected in a single topsoil sample taken from TP01 which is located close to the current entrance of the field adjacent to the farmyard.

A very minor exceedance of benzo(a)pyrene was also noted is a topsoil sample taken from SA03 in the south eastern part of the site.

6.3.3 Risk evaluation

The screening exercise has identified benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenz(a,h)anthracene and indeo(1,2,3,cd)pyrene in natural topsoil at concentrations above the GAC. These are considered further here to assess if the exceedance may be acceptable with respect to the proposed development.

It is noted that all but one of these exceedances originate from a single sample close to the current entrance to the field. It is therefore considered likely that farm machinery would have been tracking across this point and that the topsoil would have been disturbed by this machinery with the introduction of contaminants being a real possibility. It is also possible that there may have been some combustion of waste materials on this spot which may have led to the introduction of the PAH compounds which are often found as the result of combustion processes although there was no physical evidence of this on site.

Although the locations of these exceedances are beneath the main building / hardstanding in the current proposed configuration, the topsoil beneath the buildings will need to be stripped and potentially placed/re-used elsewhere on the site. These exceedances will make some of the topsoil unsuitable for reuse. Further work will therefore be required to delineate the extent of these exceedances and identify the area required for potential removal and disposal off-site.

6.4 Plant life risk assessment

6.4.1 Risk estimation

Priority phytotoxic chemical concentrations have been screened against published values to determine the likely risk to plant growth and the findings presented in Appendix F. 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.

Based on test results that exceed the GAC, the chemicals of potential concern which require further assessment are summarised in Table 6.2.

Table 6.2: Chemicals of potential concern for which further assessment is required (risk to plants)

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
Topsoil						
Bo	3	New Zealand Timber 1997	6	1.7	4.5	3
Natural Soils						
Bo	3	New Zealand Timber 1997	6	0.7	3.0	1
Ni	75	BS3882 2015	6	23	86	1
Zn	300	BS3882 2015	6	17	450	1

6.4.2 Risk evaluation

Concentrations of boron in the topsoil are slightly elevated when compared to the GAC and in the underlying natural soils boron, nickel and zinc are slightly elevated. Detriment to plant life is difficult to quantify and many of the GAC are based on agricultural crop yields rather than harm to particular plant species. As the exceedance is slight and the vegetation on site did not show any signs of physical distress, Hydrock does not believe there to be an unacceptable risk to plant life from contamination and no any additional consideration is required with regard to risks to plant life.

6.5 Pollution of controlled waters risk assessment

6.5.1 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 J. This methodology involves selecting which of several alternative

risk scenarios apply in this case. The assessment is presented in Table 6.3 below, with the justification for the scenarios selected explained in the following text:

- The site is directly underlain by the St Mary's Well Bay Member which comprises a Secondary A Aquifer and which is presumed to be in hydraulic connectivity with Sully Brook. Although there are no current groundwater extraction points for the purposes of drinking water it cannot be assumed that this will not be the case in the future.

Table 6.3: 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
D	Groundwater. Surface water.	Human health (abstraction). 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 used for human consumption and is an aquatic ecosystem.	RTM Level 1 – soil leachate	DWS 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 F and are summarised in Table 6.4.

Poly Aromatic Hydrocarbon compounds were all below the limit of detection and therefore have been omitted from the assessment tables.

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 6.4: 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							
Aluminium	200	DWS	5	5	170	1300	4
Copper	1	EQS bio†	5	5	8.6	18	5
Iron	200	DWS	5	5	110	900	4
Manganese	50 123	DWS EQS bio†	5	5	420	600	5 5
Nickel	4	EQS bio†	5	5	2.8	7.7	2

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
Lead	1.2	EQS bio†	5	2	<1	3.1	2

Note: the maximum recorded value is compared with the water quality target.

† The EQS for these substances represents a bioavailable concentration, which will be a proportion of the actual dissolved concentrations in water. No site-specific bio-availablity testing was able to be undertaken at the site and therefore the EQS bioavailable represents a conservative screening approach.

6.5.2 Risk evaluation

The EQS for copper, manganese, nickel and lead and DWS for aluminium, iron and manganese are exceeded.

Whilst there are exceedances of the water quality targets, these exceedances are considered not to represent a significant risk of pollution of Controlled Waters from an on-site source as there is no evidence of artificial accumulations of these substances on the site. Either they originate from the natural geology (Shand et. al. 2007) or they represent inflow from an off-site source. There are also no possible sources for these contaminants on the site. It is also worth noting that the leachate preparation method is aggressive and contaminants that would not be liberated in normal site conditions may be liberated by the process and therefore overestimating the quantities of contaminants leaching into the soil.

Furthermore, the inland waters EQSs for copper, manganese, nickel and lead are based on the bioavailable fraction and because bioavailability has not been calculated for these metals the assessment is conservative as it assumes 100% bioavailability.

Hydrock therefore believes that the risks to Controlled Waters do not need further consideration.

6.6 Ground gases risk assessment

6.6.1 Data

It is judged from the available evidence that the gas generation potential at the site is moderate due to the presence of a historical landfill site around 150m from the site boundary and that the sensitivity of the development is moderate. Consequently, and in accordance with CIRIA C665 (Table 5.5a and 5.5b), an appropriate minimum monitoring regime is six readings over three 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 all six of the required visits. Visits were conducted under steady and rising atmospheric conditions. The first monitoring visit recorded high groundwater levels and the screened sections of the standpipes were completely flooded. The following monitoring visits recorded partial flooded of screened sections of the standpipes.

6.6.2 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 6.5. The assessment is presented in Appendix E.

Table 6.5: Ground gas risk assessment

	Min	Max	Typical [(i)]	Comment
Steady Flow Rate (l/hr)	0.1	0.2	<0.1	-
Methane (%)	0.0	0.0	0.0	Methane has not been detected on any of the monitoring visits to date. CO_2 was detected at levels below 5% throughout the monitoring period to date.
Carbon Dioxide (%)	0.1	4.3	<5	
Oxygen (%)	6.5	20.8	-	-
Carbon Dioxide GSV Maximum flow and Concentration Per Hole (l/hr)	0.0001	0.0048	<0.07	CS1
Methane GSV Maximum Concentration Per Hole (l/hr)	0.0	0.0	<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.

As indicated in Table 6.5, the computed GSV for carbon dioxide and methane indicates CS1 conditions and methane and carbon dioxide at concentrations are 'typically' below 1% and 5% respectively. As such, the site is classified as Characteristic Situation 1 (Situation A).

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

6.6.3 Radon

As noted previously the site is located in an area where 5-10% of homes are above the radon action level and therefore basic radon protection measures will be required.

6.6.4 Off-site risks from carbon dioxide and methane

Planning Policy Wales 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 there is not considered to be a risk.

6.7 Construction materials risk assessment

6.7.1 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 J for further information).

The site is greenfield and although organic contamination (PAH) has been identified in exceedance of the threshold values in two locations these exceedances were within the topsoil and Hydrock believes barrier pipe will not be required. However, confirmation should be sought from the water supply company at the earliest opportunity.

6.7.2 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), as the concentrations of PAH are generally below 100mg/kg in and therefore it is likely that standard pipework will be suitable although the pipework manufacturer should be consulted with regards to the suitability of the pipework.

The implications for buried concrete are discussed in Section 5.9.

6.8 Contamination risks to ground workers

6.8.1 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.

6.8.2 Metals, metalloids, PAH and petroleum hydrocarbons

The Topsoil contain elevations of PAH in the vicinity of TP01 which is located adjacent to the current entrance to the site from the existing farmyard.

6.8.3 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 depleted oxygen, and should take all necessary health and safety precautions when working in trenches or confined spaces.

6.8.4 Asbestos

As no clearly identifiable ACM has been seen during the site walkover or during the ground investigation and no fibres have been detected in soil samples analysed by laboratory testing, CAR2012 does not apply. However, there is always the possibility of unexpected contamination and the Contractors should undertake a watching brief during the works. If any suspect material is encountered, works in that area of the site should stop, the area fenced off and Hydrock should be notified.

6.9 Findings of the generic contamination risk assessments

The potential sources, pathways and receptors identified in the desk study (Section 2) have been investigated (Sections 3 and 4) and assessed (Sections 6.2 to 6.7). A Source-Pathway-Receptor linkage assessment has been undertaken and is presented in Appendix I (Table K.2).

The final Conceptual Model is illustrated on Hydrock Drawing 17379-HYD-XX-XX-DR-GE-1006 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 6.6.

Table 6.6 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 this assumption is not agreed during regulatory discussions, the conclusions as noted in Table 6.6 will need to be updated:

Table 6.6: Residual risks following risk evaluation

Contaminant Linkage				Comments	
Pollutant Linkage	Sources	Pathways	Receptors	General	Mitigation
PL 1.	Area of PAH contamination in topsoil in vicinity of TP01	Ingestion, inhalation or direct contact.	Human health.	Exceedance of the GAC.	Further testing required to delineate the area affected. Material may need to be disposed of off-site and not reused on site.
PL 2.	Radon.	Migration through soils indoor air.	End users of new buildings.	The part of the site where construction is proposed is within an area where basic radon protection is required	Installation of basic radon protection measures.

6.10 Mitigation measures

The outline remediation strategy presented below is provided for guidance only, and does not represent a 'Remediation Options Appraisal', or a 'Remediation Strategy', prepared in accordance with LCRM (2019).

As shown in Table 6.6 (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. The mitigation measures include:

- Additional testing to delineate the area of contamination in the topsoil around TP01 and determine how much material will need to be transported off site.(PL1).
- Installation of basic radon protection measures (PL2).

Following the further delineation of the aforementioned contaminated topsoil a methodology for the remediation required should be set out in a Remediation Strategy (which will include the 'Implementation Plan', and the 'Verification Plan' a), 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 in accordance with waste regulations.

Verification reports by a competent independent geo-environmental specialist will be required following completion of any remedial works (including membrane installation for radon protection).

7. WASTE AND MATERIALS MANAGEMENT

7.1 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 7.2 below describes the key issues relating to off-site disposal to landfill and Section 7.3 considers requirements relating to reuse of soils and materials management.

7.2 Waste disposal

7.2.1 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.

7.2.2 HazWasteOnline™ assessment

As the site is greenfield, HazWasteOnline™ assessment is not technically required. However, it has been undertaken for completeness during the site investigation. The output of the HazWasteOnline™ assessment is provided in Appendix G and a summary of the preliminary waste classification is provided below in Section 7.2.4.

7.2.3 WAC Testing

As the site is greenfield, quantitative WAC testing is not required and as such has not been undertaken at this stage. Whilst unlikely, if requested, WAC testing may be required during the Basic Characterisation process required by the Landfill operator for the excavated material prior to disposal.

7.2.4 Preliminary waste disposal options

The site is greenfield (as proven by the desk study assessment and a visual assessment of the soils). However, a HazWasteOnline™ assessment has been undertaken. As long as no unexpected contamination is encountered and if suitable segregation of different types of natural waste streams is put in place, for soils to be disposed of, it is considered that the site soils are likely to be classified as non-hazardous waste.

7.2.5 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 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).

7.3 Materials management

7.3.1 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).

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

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

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.

7.3.2 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.

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.

Clean, naturally occurring materials – transferred to other sites

Where soils are naturally occurring, uncontaminated and are transferred to other sites (i.e. direct transfer), they will not become waste as long as the transfer is undertaken in accordance with the DoWCoP. A MMP must be prepared for the receiving site and the materials movement must be noted in the MMP of the Donor site. This movement must have been declared to CL:AIRE prior to the works commencing.

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.

8. UNCERTAINTIES AND LIMITATIONS

8.1 Site-specific comments

8.2 General comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of AECOM (the Client), by e-mail dated 20th April 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 May 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.

Plans that provide assessment of foundation types and depths are indicative and subject to further design. This design should incorporate a detailed assessment of the influence of trees, influence of cut to fill proposals and geological conditions.

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.

The work has been carried out in general accordance with recognised best practice. The various methodologies used are referenced in Appendix J. 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.

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.

9. RECOMMENDATIONS FOR FURTHER WORK

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

- one day of hand pitting and chemical testing around TP01 to delineate the area of contaminated topsoil (this has now been completed, please refer to the letter report (YYD-HYD-XX-XX-RP-GE-0004_S0_P1 for conclusions)
- specialist UXO/UXB risk assessment in accordance with CIRIA Report C681 with regard to construction risk;
- 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;
- production of a Remediation Strategy (if required following discussion with regulatory bodies).
- production of a Materials Management Plan relating to reuse of soils at the site;
- remediation and mitigation works (if required); and
- verification of the, remediation and mitigation works (if required).

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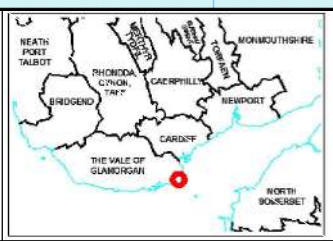
Appendix A

Drawings

OS NORTH

Site Ref: ST16

0 500 Metres



REV.						
P1	FIRST ISSUE	DC	02/11/20	MH	02/11/20	AE 02/11/20
	REVISION NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY DATE

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CLIENT
AECOM

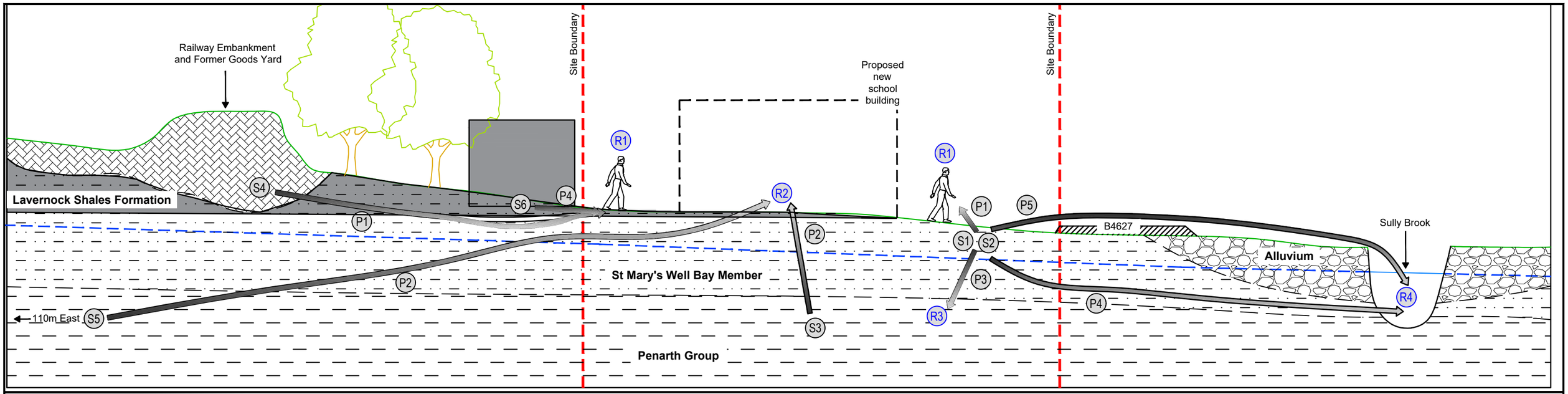
PROJECT
YSGOL Y DERI 2

TITLE
SITE LOCATION PLAN

HYDROCK PROJECT NO.	SCALE @ A4
C-17379-C	1:25,000

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
17379-HYD-XX-XX-DR-GE-1000	P1



Potential on-site sources of contamination

S1. Hydrocarbon fuels and lubricants from agricultural machinery used on the site.

S2. Fertilisers and pesticides used during agricultural work at the site.

S3. Radon.

Potential off-site sources of contamination

S4. Contaminants associated with the former railway station and goods yard 150m southwest of the site, possibly including metals, metalloids, fuels and lubricants.

S5. Ground gases (carbon dioxide and methane) from organic materials in the former landfill site 110m to the east.

S6. Above ground sealed slurry tank in Lower Cosmeston Farm.

Potential receptors

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

R1. People (neighbours, site end users).

R2. Development end use (buildings, utilities and landscaping).

R3. Groundwater: Secondary A aquifer status of the St Mary's Well Bay Member.

R4. Surface water: drainage ditch on eastern boundary and Sully Brook 75m north of the site.

Potential pathways

The following potential pathways have been identified.

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

P2. Methane and Radon ingress via permeable soils and/or construction gaps.

P3. Migration of contaminant via leachate migration through the unsaturated zone in the St Mary's Well Bay Member.

P4. Migration of contaminant through the groundwater towards surface water or groundwater on site.

P5. Surface water via overland flow and drainage network.

KEY

- Existing ground profile
- Conjectural geological boundary
- Groundwater elevation
- Alluvium
- St Mary's Well Bay Member
- Penarth Group

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.

REV.	REVISION NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P2	UPDATED SITE BOUNDARY	DM	13/11/20	MH	17/11/20	AE	18/11/20
P1	FIRST ISSUE	DC	02/11/20	MH	02/11/20	AE	02/11/20

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CLIENT: AECOM

PROJECT: YSGOL Y DERI 2

TITLE: OUTLINE CONCEPTUAL SITE MODEL

HYDROCK PROJECT NO.: C-17379-C

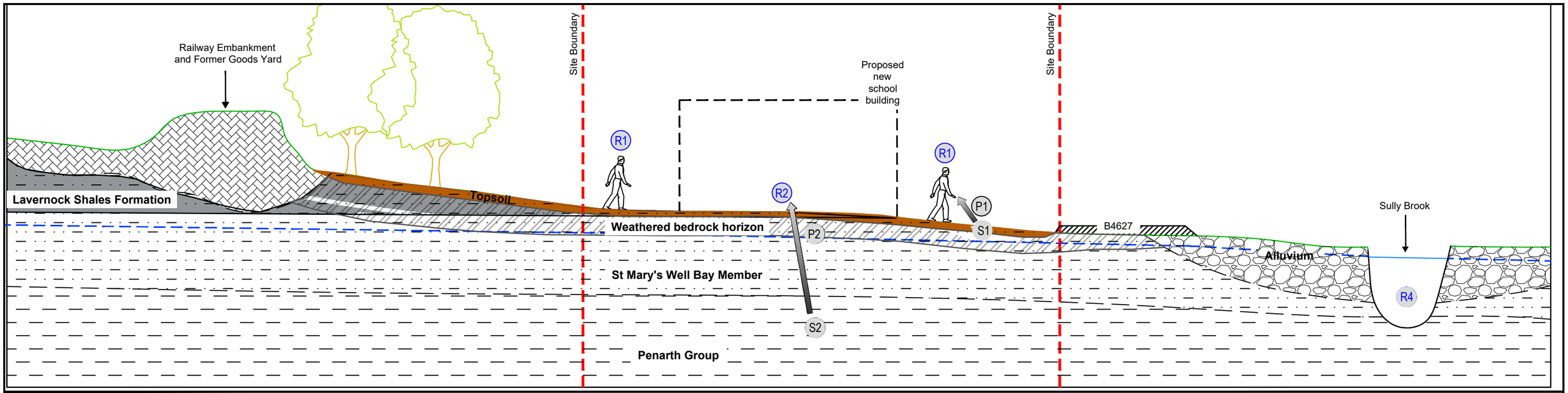
SCALE @ A3: NTS

PURPOSE OF ISSUE: SUITABLE FOR INFORMATION

STATUS: S2

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER): 17379-HYD-XX-XX-DR-GE-1001

REVISION: P2



On-site sources of contamination

S1. Exceedances of PAH in the topsoil adjacent to the current site entrance from the farmyard.

S2. Radon

Potential receptors

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

R1. People (neighbours, site end users).

R2. Development end use (buildings, utilities and landscaping).

R3. Groundwater: Secondary A aquifer status of the St Mary's Well Bay Member.

R4. Surface water: drainage ditch on eastern boundary and Sully Brook 75m north of the site.

Potential pathways

The following potential pathways have been identified.

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

P2. Radon ingress via permeable soils and/or construction gaps.

KEY

- Existing ground profile
- Geological Boundary
- Groundwater elevation
- Alluvium
- St Mary's Well Bay Member
- Penarth Group
- Topsoil
- Weathered Horizon

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. Locations of groundwater, weathered material and topsoil based upon results of ground investigation.

REV.	REVISION NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P1	FIRST ISSUE	DM	07/06/21	MH	11/06/21	AE	15/06/21

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CLIENT: AECOM

PROJECT: YSGOL Y DERI 2

TITLE: UPDATED CONCEPTUAL SITE MODEL

HYDROCK PROJECT NO.: C-17379-C

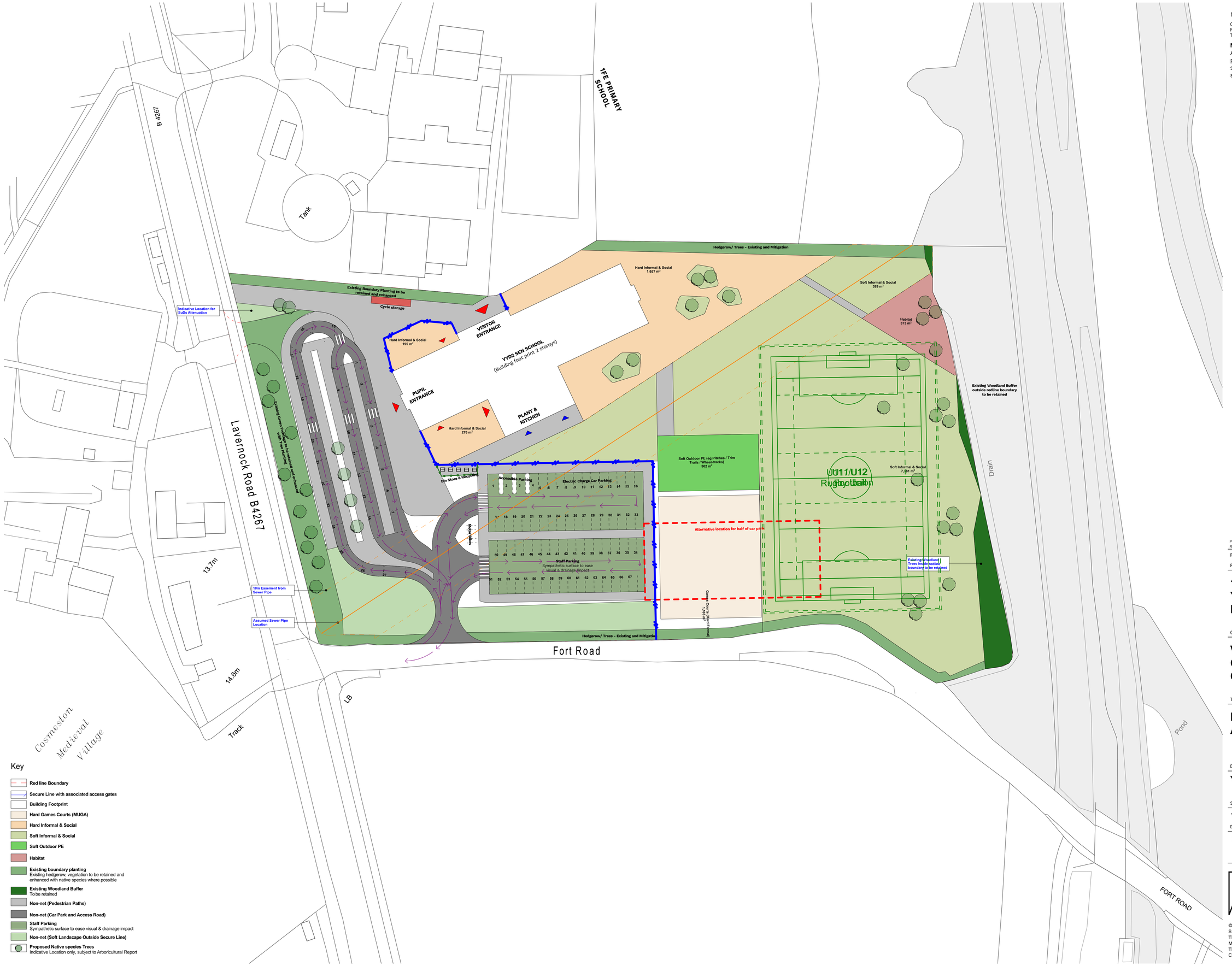
SCALE @ A3: NTS

PURPOSE OF ISSUE: SUITABLE FOR INFORMATION

STATUS: S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER): 17379-HYD-XX-XX-DR-GE-1005

REVISION: P2



Notes

Check all dimensions on site. Do not scale from this drawing
Report any discrepancies and omissions to HLM Architects
This Drawing is Copyright ©

NB:
All details and design layout subject to provision of detailed topographical, utility, services, arboricultural and full ecological surveys.

N

Key

- **Red line Boundary**
- **Secure Line with associated access gates**
- **Building Footprint**
- **Hard Games Courts (MUGA)**
- **Hard Informal & Social**
- **Soft Informal & Social**
- **Soft Outdoor PE**
- **Habitat**
- **Existing boundary planting**
  Existing hedgerow, vegetation to be retained and enhanced with native species where possible
- **Existing Woodland Buffer**
  To be retained
- **Non-net (Pedestrian Paths)**
- **Non-net (Car Park and Access Road)**
- **Staff Parking**
  Sympathetic surface to ease visual & drainage impact
- **Non-net (Soft Landscape Outside Secure Line)**
- **Proposed Native species Trees**
  Indicative Location only, subject to Arboricultural Report

Rev	Description	Date	By	Chk
P01	FOR REVIEW & COMMENT	22.02.2021	AMS	

Revisions — Suitability

Project

15-1077-01
Ysgol Y Deri - Primary School

Client

Vale of Glamorgan Council

VALE of GLAMORGAN
BRO MORGANNWG

Title

Proposed Site Layout - Alternative

Drawing No.	Revision
YD2-HLM-00-00-DR-L-00004	P01

Scale @ A1	Drawn
1:500	AMS
Date	Checked
22.02.2021	

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Appendix B

Site Overview Photographs

Included here because it was not possible to access the site during the initial Phase 1 walkover.

Overview Photograph 1	
Date: 20/05/2021	
Direction Photograph Taken: northwest	
Description: Looking along northeastern site boundary.	

Overview Photograph 2	
Date: 20/05/2021	
Direction Photograph Taken: southwest	
Description: Looking across southern part of the site.	

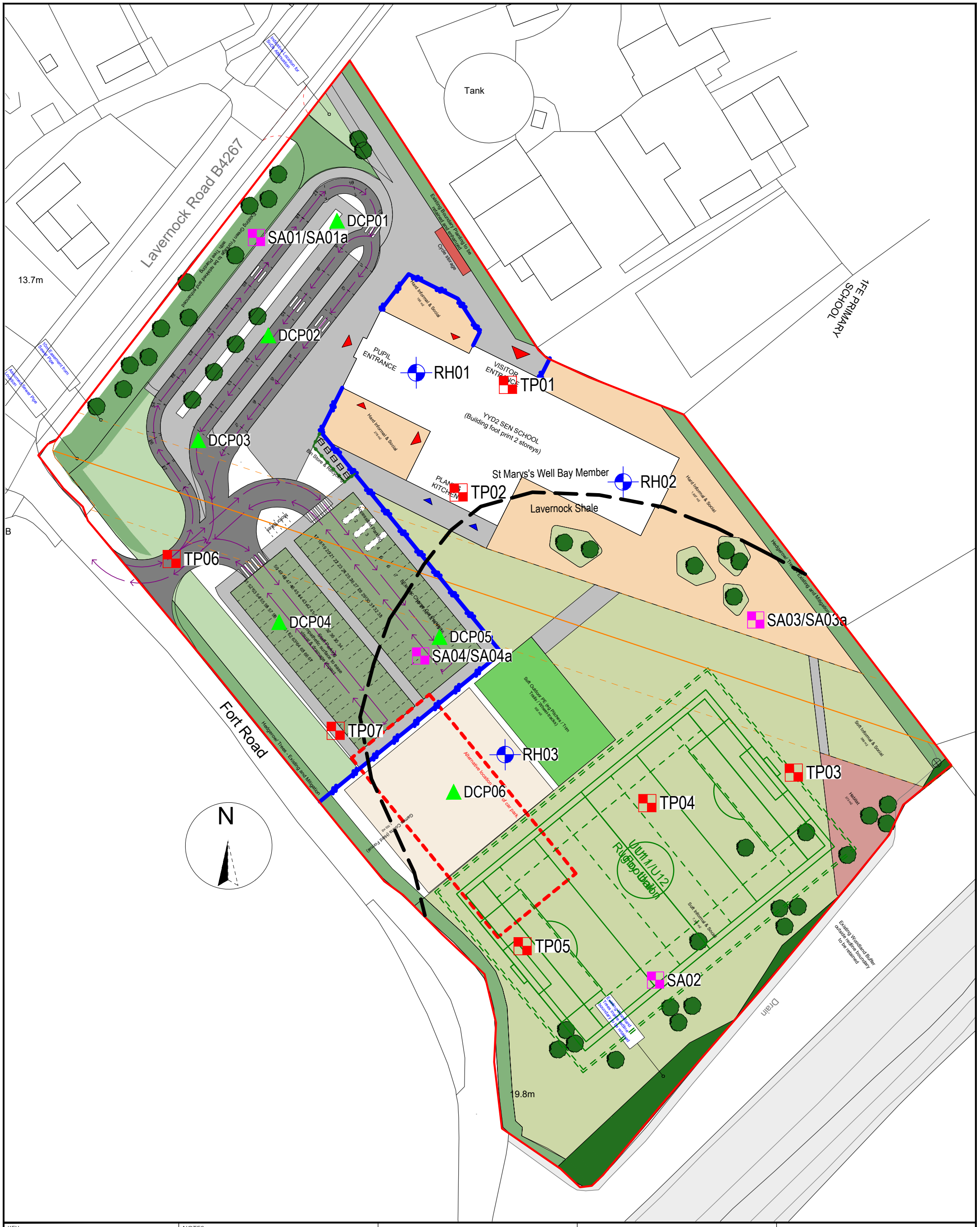
Overview Photograph 3	
Date: 20/05/2021	
Direction Photograph Taken: northeast	
Description: Looking across northern part of the site.	

Overview Photograph 4	
Date: 20/05/2021	
Direction Photograph Taken: northwest	
Description: Looking along southwestern boundary of site.	

Appendix C

Exploratory Hole Location Plan, Exploratory Hole Logs and Photographs

Exploratory Hole Location Plan



KEY

- Site Boundary
- DCP — TRL DCP Position
- RH — Rotary Borehole Position
- TP — Trail Pit Position
- SA — Soakaway Position
- Inferred contact between St Mary's Well Bay Member and Lavernock Shale

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:
HLM Architects Drawing YD"-HLM-00-00-DR-L-00004.
4. The line of inferred geology on this drawing represents the maximum possible extent of the Lavernock Shale outcrop. It is possible it will not be present beneath the building footprint.

REV.	REVISION NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P1	FIRST ISSUE	DM	07/08/21	MH	11/06/21	AE	15/06/21

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CLIENT: AECOM

PROJECT: YSGOL Y DERI 2

TITLE: EXPLORATORY HOLE LOCATION PLAN
With inferred geological boundary

HYDROCK PROJECT NO.	SCALE @ A3
C-17379-C	1:750

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
17379-HYD-XX-XX-DR-GE-1004	P1

Exploratory Hole Logs

Hydrock

Project: Ysgol Y Deri 2

Borehole No
RH01
Page No. 1 of 1

Method: Dynamic Sampled & Rotary Cored	Date(s): 21/05/2021	Logged By: DM	Drilled By: Apex Drilling
Client: AECOM	Co-ords: 317855.04, 168894.14	Checked By: MH	Flush: Air Mist
Hydrock Project No: C-17379-C	Ground Level: 14.81m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	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
	0.00 - 0.20	ES							Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.30	(0.30)	14.51		
	0.30 - 0.50	ES							Firm to stiff dark yellowish brown and grey slightly gravelly CLAY with a few subrounded limestone cobbles. Gravel is fine to medium subangular to subrounded of limestone. (WEATHERED ST MARY'S WELL BAY MEMBER)	1	(0.90)			
1.00 - 2.50	1.00	SPT	N=32 (2,5,8,7,7,10)							1.20		13.61		
	1.00 - 1.20	D		100	40	15	NI 40 200		Medium strong grey very thin to thin LIMESTONE beds interbedded with very closely to closely spaced very weak to weak dark grey thickly laminated very thin to thin MUDSTONE beds. (ST MARY'S WELL BAY MEMBER)	2				
	2.35 - 2.50	C												
2.50 - 4.00	2.50	SPT	50/8mm (25,50)	60	25	10				3	(4.30)			
	3.85 - 4.00	C												
4.00 - 5.50	4.00	SPT	50/0mm (25)	65	25	20				4				
	5.30 - 5.50	C								5				
	5.50	SPT	50/5mm (25,50)						End of Borehole at 5.50m	5.50		9.31		
										6				
										7				
										8				
										9				
										10				

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
Fraste	21/05	0900	0.00	0.00	110		Air Mist	
Fraste	21/05	1200	5.50	5.50	110		Air Mist	

General Remarks:
1. Position cleared using CAT and Genny. 2. Hand pit dug to 0.4m bgl. 3. Dynamic sampling techniques used from 0.4m to 1m bgl. 4. Rotary coring techniques used from 1m to 5.5m using air mist flush. 5. Gas and Groundwater monitoring pipe installed as shown on log. 6. No visual or olfactory contamination noted during drilling.

Groundwater: Groundwater not noted. Strike would have been masked by drill flush.

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Borehole No
RH02
Page No. 1 of 1

Method: Dynamic Sampled & Rotary Cored	Date(s): 20/05/2021	Logged By: DM	Drilled By: Apex Drilling
Client: AECOM	Co-ords: 317897.81, 168866.46	Checked By: MH	Flush: Air Mist
Hydrock Project No: C-17379-C	Ground Level: 15.79m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	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
	0.00 - 0.20	ES							Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.20	(0.20)	15.59		
	0.40	SPT	N=24 (2,6,11,7,4,2)						Firm orangish brown firm CLAY. (WEATHERED ST MARY'S WELL BAY MEMBER)		(1.00)			
	1.00 - 1.20	D								1				
1.20 - 2.70	1.20	SPT	50/5mm (25,50)	55	20	20	NI 40 200		Medium strong grey very thin to thin LIMESTONE beds interbedded with very closely to closely spaced very weak to weak dark grey thickly laminated very thin to thin MUDSTONE beds. (ST MARY'S WELL BAY MEMBER)	1.20		14.59		
	2.35 - 2.50	C								2				
2.70 - 4.20	2.70	SPT	50/4mm (25,50)	80	40	20					(4.50)			
	3.90 - 4.10	C								3				
4.20 - 5.70	4.20	SPT	50/0mm (25)	95	45	40				4				
	5.30 - 5.45	C								5				
	5.70	SPT	50/0mm (25)						End of Borehole at 5.70m	5.70		10.09		
										6				
										7				
										8				
										9				
										10				

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
Fraste	20/05	1000	0.00	0.00	110		Air Mist	
Fraste	20/05	1500	5.70	5.70	110		Air Mist	

General Remarks:
1. Position cleared using CAT and Genny. 2. Hand pit dug to 1.0m bgl. 3. Dynamic sampling techniques used from 1.0m to 1.2m bgl. 4. Rotary coring techniques used from 1.2m to 5.7m using air mist flush. 5. Gas and Groundwater monitoring pipe installed as shown on log. 6. No visual or olfactory contamination noted during drilling.

Groundwater: Groundwater encountered at around 0.4m bgl in hand pit.

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Borehole No
RH03
Page No. 1 of 1

Method: Rotary Open	Date(s): 20/05/2021	Logged By: DM	Drilled By: Apex Drilling
Client: AECOM	Co-ords: 317866.90, 168813.07	Checked By: MH	Flush:
Hydrock Project No: C-17379-C	Ground Level: 17.27m OD		Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
								Arisings not logged. Likely to be Lavernock Shale considering location of borehole.		(5.50)			
									5.50		11.77		
								End of Borehole at 5.50m					

Progress and Observations

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

General Remarks:
1. Position cleared using CAT and Genny. 2. Hand pit dug to 1.0m bgl. 3. Rotary open hole techniques used from 1m to 5.5m bgl using air mist. 4. Gas and groundwater monitoring pipe installed as shown on log. 5. No visual or olfactory contamination noted during drilling.

Groundwater: Groundwater not noted. Strike would have been masked by drill flush.

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Trialpit No
SA01
Page No. 1 of 1

Method: Trial Pit	Date(s): 19/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317828.21, 168921.14	Stability: Unstable	Dimensions: m / m — Scale: 1:25
Hydrock Project No: C-17379-C	Ground Level: 13.69m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.20	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.20	(0.20)	13.49	
0.30 - 0.50	ES			Medium strong grey LIMESTONE with very thin closely spaced bands of stiff brown and grey sandy clay. Recovered as subangular limestone cobbles with some fine to coarse subangular gravel and stiff clay. (ST MARY'S WELL BAY MEMBER)		(1.00)		
0.90 - 1.10	D			*... 0.9 - 1.1 Band of stiff brown and grey sandy CLAY.*	1			
			▼	Base of Excavation at 1.20m	1.20		12.49	
					2			
					3			
					4			
					5			

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Pit refused on bedrock with breaker used to gain final 0.2m. (4) Pit unstable so unsuitable for soakway test. (5) Soakaway test undertaken in 0.5m deep pit adjacent to the main pit. (6) Pit backfilled with arisings. (7) No visual or olfactory signs of contamination during excavation.

Groundwater: Minor seepage at 1.15m

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Trialpit No
SA02
Page No. 1 of 1

Method: Trial Pit	Date(s): 19/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317907.76, 168769.82	Stability: Stable	Dimensions: m
Hydrock Project No: C-17379-C	Ground Level: 19.57m 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						
0.00 - 0.30	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)		(0.30)		
0.30 - 0.70	ES				0.30		19.27	
0.50 - 0.90	D			Firm to stiff orangish brown silty CLAY with occasional rounded cobbles. (WEATHERED LAVERNOCK SHALE)				
0.90	HSV	80kPa			1	(1.60)		
1.80	HSV	110kPa						
					1.90		17.67	
				Base of Excavation at 1.90m				
					2			
					3			
					4			
					5			

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Soakaway test undertaken in the pit following excavation. (4) Pit backfilled with arisings. (5) No visual or olfactory contamination noted during excavation.

Groundwater: Groundwater not encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Trialpit No
SA03
Page No. 1 of 1

Method: Trial Pit	Date(s): 19/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317932.54, 168833.47	Stability: Unstable	Dimensions: m
Hydrock Project No: C-17379-C	Ground Level: 17.72m 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						
0.00 - 0.20	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.20	(0.20)	17.52	
0.20 - 0.60	D			Firm to stiff reddish brown and grey silty CLAY. (WEATHERED LAVERNOCK SHALE)				
0.20 - 0.60	ES							
0.50	HSV	70kPa				(1.50)		
1.20 - 1.70	D							
1.40	HSV	80kPa						
				Base of Excavation at 1.70m	1.70		16.02	

1
2
3
4
5

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Pit unsuitable for soakaway test due to instability and seepage at base of pit. (4) Soakway test undertaken in 0.5m deep pit adjacent to the main pit. (5) Pit backfilled with arisings. (6) No visual or olfactory signs of contamination during excavation.

Groundwater: Seepage at 1.6m

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Trialpit No
SA04
Page No. 1 of 1

Method: Trial Pit	Date(s): 19/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317842.68, 168826.20	Stability: Unstable	Dimensions: m
Hydrock Project No: C-17379-C	Ground Level: 16.75m 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						
0.00 - 0.20	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.20	(0.20)	16.55	
0.20 - 0.50	ES			Stiff brown and grey mottled sandy slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of limestone and sand is fine to coarse. (WEATHERED ST MARY'S WELL BAY MEMBER)	0.85	(0.65)	15.90	
0.30 - 0.70	D			Medium strong grey LIMESTONE with very thin closely spaced bands of stiff brown and grey sandy clay. Recovered as subangular limestone cobbles with some fine to medium subangular to subrounded gravel and stiff clay. (ST MARY'S WELL BAY MEMBER)	1.60	(0.75)	15.15	
				Base of Excavation at 1.60m				

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Pit unsuitable for soakaway test due to instability and seepage in the base of the pit. (4) Soakaway test undertaken in 0.5m deep pit adjacent to the main pit. (5) Pit backfilled with arisings. (6) No visual or olfactory signs of contamination during excavation of pit.

Groundwater: Seepage at 1.3m

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Trialpit No
TP01
Page No. 1 of 1

Method: Trial Pit	Date(s): 21/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317883.34, 168887.71	Stability: Stable	Dimensions: m / m — Scale: 1:25
Hydrock Project No: C-17379-C	Ground Level: 15.14m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.30	(0.30)	14.84	
0.30 - 0.50	ES			Firm to stiff grey and orangish brown slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded. (WEATHERED ST MARY'S WELL BAY MEMBER)				
0.40 - 0.60	D							
0.50	HSV	80kPa		*... 0.6 - 0.75 Band of medium strong grey limestone.*	0.85	(0.55)	14.29	
				Base of Excavation at 0.85m				

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Pit refused on limestone bedrock. (4) Pit backfilled with arisings. (5) No visual or olfactory contamination noted during excavation.

Groundwater: Groundwater not encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2	Trialpit No TP02 Page No. 1 of 1

Method: Trial Pit	Date(s): 21/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317869.99, 168867.18	Stability: Stable	Dimensions: m / m
Hydrock Project No: C-17379-C	Ground Level: 15.66m 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						
0.00 - 0.30	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.30	(0.30)	15.36	
0.30 - 0.60 0.30 - 1.00 0.40 - 0.70	ES B D			Firm to stiff grey and orangish brown slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded. (WEATHERED ST MARY'S WELL BAY MEMBER)	1.00	(0.70)	14.66	
				Base of Excavation at 1.00m				

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Pit refused on limestone bedrock. (4) Pit backfilled with arisings. (5) No visual or olfactory contamination noted during excavation.

Groundwater: Significant groundwater inflow at 0.9m

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2	Trialpit No TP03 Page No. 1 of 1

Method: Trial Pit	Date(s): 21/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317938.06, 168794.59	Stability: Stable	Dimensions: m / m
Hydrock Project No: C-17379-C	Ground Level: 19.71m 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						
0.00 - 0.30	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.30	(0.30)	19.41	
0.30 - 0.50	ES			Firm orangish brown silty CLAY. (WEATHERED LAVERNOCK SHALE)	0.75	(0.45)	18.96	
0.40 - 0.60	D			Base of Excavation at 0.75m				

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Pit terminated at planned depth. (4) Pit backfilled with arisings. (5) No visual or olfactory contamination noted during excavation.

Groundwater: Groundwater not encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Trialpit No
TP04
Page No. 1 of 1

Method: Trial Pit	Date(s): 19/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317898.80, 168813.18	Stability: Unstable	Dimensions: m / m — Scale: 1:25
Hydrock Project No: C-17379-C	Ground Level: 17.43m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.20	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.20	(0.20)	17.23	
0.20 - 0.50	ES							
0.30 - 0.90	D			Firm orangish brown silty CLAY. (WEATHERED LAVERNOCK SHALE)	0.90	(0.70)	16.53	
0.70	HSV	80kPa						
1.00 - 1.50	D			Extremely weak thickly laminated MUDSTONE. (LAVERNOCK SHALE)	1.70	(0.80)	15.73	
				Base of Excavation at 1.70m				

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Pit terminated at planned depth. (4) Pit backfilled with arisings. (5) No visual or olfactory contamination noted during excavation.

Groundwater: Seepage at 1.65m

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Trialpit No
TP05
Page No. 1 of 1

Method: Trial Pit	Date(s): 19/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317882.93, 168769.36	Stability: Unstable	Dimensions: m / m — Scale: 1:25
Hydrock Project No: C-17379-C	Ground Level: 18.70m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.20	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.20	(0.20)	18.50	
0.30 - 0.50	ES			Firm orangish brown silty CLAY. (WEATHERED LAVERNOCK SHALE)				
0.30 - 0.80	D					(0.90)		
0.80	HSV	70kPa			1			
1.10 - 1.60	D			Extremely weak thickly laminated MUDSTONE. (LAVERNOCK SHALE)	1.10		17.60	
						(0.60)		
				Base of Excavation at 1.70m	1.70		17.00	
					2			
					3			
					4			
					5			

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Pit terminated at planned depth. (4) Pit backfilled with arisings. (5) No visual or olfactory contamination noted during excavation.

Groundwater: Groundwater not encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Trialpit No
TP06
Page No. 1 of 1

Method: Trial Pit	Date(s): 21/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317803.85, 168844.69	Stability: Stable	Dimensions: m
Hydrock Project No: C-17379-C	Ground Level: 16.20m 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						
0.00 - 0.30	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.30	(0.30)	15.90	
0.30 - 0.50 0.30 - 0.70	ES D			Firm to stiff yellowish brown sandy gravelly CLAY with many subrounded to subangular cobbles of limestone. Sand is fine to coarse and gravel is fine to coarse subangular to subrounded. (WEATHERED ST MARY'S WELL BAY MEMBER) *... 0.9 - 1.0 Band of extremely weak grey finely laminated mudstone.*	1.00	(0.70)	15.20	
				Base of Excavation at 1.00m				

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Pit terminated at planned depth. (4) Pit backfilled with arisings. (5) No visual or olfactory contamination noted during excavation.

Groundwater: Groundwater not encountered

Logged in general accordance with BS5930:2015

Hydrock

Project: Ysgol Y Deri 2

Trialpit No
TP07
Page No. 1 of 1

Method: Trial Pit	Date(s): 21/05/2021	Logged By: DM	Checked By: MH
Client: AECOM	Co-ords: 317841.99, 168809.93	Stability: Stable	Dimensions: m / m; Scale: 1:25
Hydrock Project No: C-17379-C	Ground Level: 17.36m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	ES			Firm dark brown silty CLAY with rootlets. (TOPSOIL)	0.30	(0.30)	17.06	
0.30 - 0.50 0.30 - 1.00 0.40 - 1.00	ES B D			Firm creamy brown silty gravelly CLAY with some subrounded limestone cobbles. Gravel is fine to coarse subrounded to subangular of limestone. (WEATHERED ST MARY'S WELL BAY MEMBER)	1.00	(0.70)	16.36	
				Base of Excavation at 1.00m				

General Remarks:
(1) Position scanned with CAT and Genny prior to excavation. (2) Excavation undertaken using toothless bucket. (3) Pit terminated at planned depth. (4) Pit backfilled with arisings. (5) No visual or olfactory contamination noted during excavation.

Groundwater: Minor seepage at 0.7m

Logged in general accordance with BS5930:2015

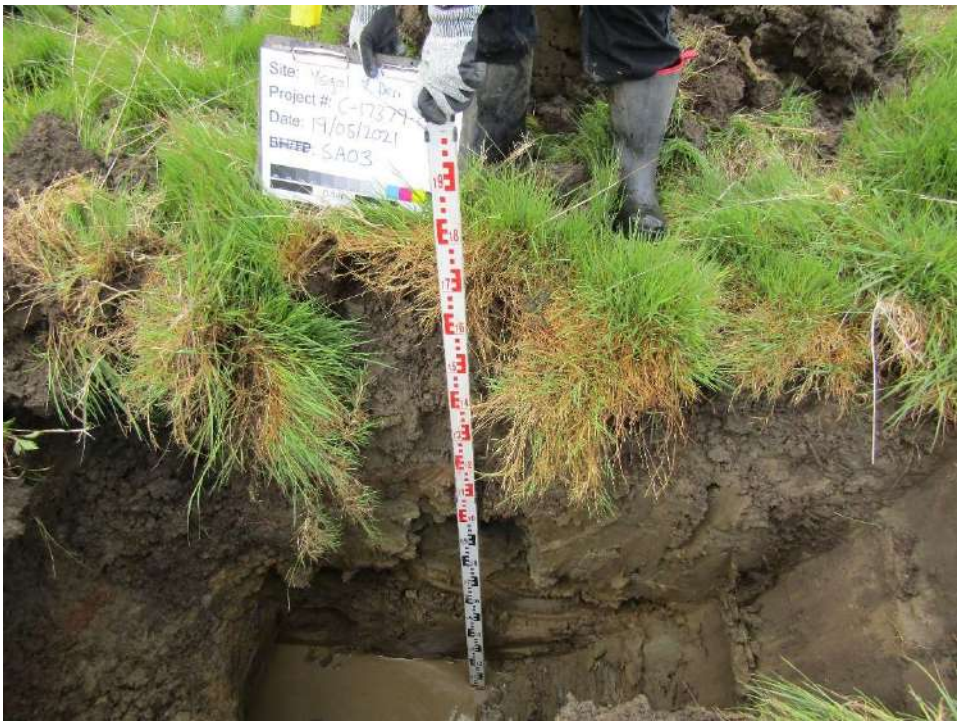
Exploratory Hole Photographs

Site Investigation Photograph 1	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: SA01.	

Site Investigation Photograph 2	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: SA01 arisings.	

Site Investigation Photograph 3	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: SA02.	

Site Investigation Photograph 4	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: SA02 arisings.	

Site Investigation Photograph 5	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: SA03.	

Site Investigation Photograph 6	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: SA03 arisings.	

Site Investigation Photograph 7	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: SA04.	

Site Investigation Photograph 8	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: SA04 arisings.	

Site Investigation Photograph 9	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: TP01	

Site Investigation Photograph 10	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: TP01 arisings.	

Site Investigation Photograph 11	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: TP02.	

Site Investigation Photograph 12	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: TP02 arisings.	

Site Investigation Photograph 13	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: TP03	

Site Investigation Photograph 14	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: TP03 arisings.	

Site Investigation Photograph 15	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: TP04	

Site Investigation Photograph 16	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: TP04 arisings.	

Site Investigation Photograph 17	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: TP05.	

Site Investigation Photograph 18	
Date: 19/05/2021	
Direction Photograph Taken: n/a.	
Description: TP05 arisings.	

Site Investigation Photograph 19	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: TP06	

Site Investigation Photograph 20	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: TP06 arisings.	

Site Investigation Photograph 21	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: TP07	

Site Investigation Photograph 22	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: TP07 arisings.	

Site Investigation Photograph 23	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: RH01 1.0 – 2.5m	

Site Investigation Photograph 24	
Date: 21/05/2021	
Direction Photograph Taken: n/a.	
Description: RH01 2.5 – 5.5m	

Site Investigation Photograph 25	
Date: 20/05/2021	
Direction Photograph Taken: n/a.	
Description: RH02 1.0 – 4.2m	

Site Investigation Photograph 26	
Date: 20/05/2021	
Direction Photograph Taken: n/a.	
Description: RH02 4.2 – 5.7m	

Appendix D

Geotechnical Test Results and Geotechnical Plots

Geotechnical Plots

Hydrock

Client	Location or material to which this assessment applies
AECOM	Lavernock Shale
Project	
Ysgol Y Deri 2	
Job number	
C-17379-C	

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	0
No. tests in 20% data set	1	1	
No. tests with suspected pyrite		0	
Maximum value	32.8	0.2	
Mean of highest two values	28	0	
Mean of highest 20%			
Characteristic Value	**32.8**	**0.2**	

	[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	3	0
No. tests in 20% data set	1	
Lowest pH	7.8	
Mean of lowest 20%	7.8	
Characteristic value	**7.8**	

Design value **7.8**

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)

Hydrock

Client	Location or material to which this assessment applies
AECOM	St Mary's Well Bay Member
Project	
Ysgol Y Deri 2	
Job number	
C-17379-C	

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	0
No. tests in 20% data set	1	1	
No. tests with suspected pyrite		0	
Maximum value	230	0.2	
Mean of highest two values	134	0	
Mean of highest 20%			
Characteristic Value	**230**	**0.2**	

	[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	4	0
No. tests in 20% data set	1	
Lowest pH	7.8	
Mean of lowest 20%	7.8	
Characteristic value	**7.8**	
Design value	**7.8**	
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)

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TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

Tested in accordance with In TRL Road Note 31 & 8 and IAN 73/06 (2009 amendment)

Client: AECOM

Client Address: 1 Callaghan Square
Cardiff

Postcode: CF10 5BT

Contact:

Site Name: Ysgol Y Deri

Site Address: Lavernock Road
Cosmeston

Certificate Number:

Client Reference:

Job Number: C-17379-C

Date Received:

Date Tested: 18th May 2021

Test Results:

Sample Description:

Sample Number:

Start Depth [mm]: Started at Ground Level

Test Location: DCP01

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Topsoil	6	6	3	410	410
Natural	89	95	72	346	756

Comments: TRL Equation : $Log_{10}(CBR) = 2.480 - 1.057 \times Log_{10}(Strength)$

Approved Signatory:

Name: Matthew Holbourn

Signed: Matthew Holbourn

Position: Geotechnical Engineer

Date Reported: 24th May 2021

Form Number: HD-TRL-DCP ver1

for and behalf of
Hydrock

Registered Office:
Hydrock Consultants Ltd
Over Court Barns
Over Lane Almondsbury
Bristol BS32 4DF U.K.

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Email: cardiff@hydrock.com

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

Tested in accordance with In TRL Road Note 31 & 8 and IAN 73/06 (2009 amendment)

Client: AECOM

Client Address: 1 Callaghan Square
Cardiff

Postcode: CF10 5BT

Contact:

Site Name: Ysgol Y Deri

Site Address: Lavernock Road
Cosmeston

Certificate Number:

Client Reference:

Job Number: C-17379-C

Date Received:

Date Tested: 18th May 2021

Test Results:

Sample Description:

Sample Number:

Start Depth [mm]: Started at Ground Level

Test Location: DCP02

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Topsoil	7	7	5	346	346
Natural	71	78	77	258	604

Comments: TRL Equation : $Log_{10}(CBR) = 2.480 - 1.057 \times Log_{10}(Strength)$

Approved Signatory:

Name: Matthew Holbourn

Signed: Matthew Holbourn

Position: Geotechnical Engineer

Date Reported: 24th May 2021

Page 1 of 1

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Tested in accordance with In TRL Road Note 31 & 8 and IAN 73/06 (2009 amendment)

Client: AECOM

Client Address: 1 Callaghan Square
Cardiff

Postcode: CF10 5BT

Contact:

Site Name: Ysgol Y Deri

Site Address: Lavernock Road
Cosmeston

Certificate Number:

Client Reference:

Job Number: C-17379-C

Date Received:

Date Tested: 18th May 2021

Test Results:

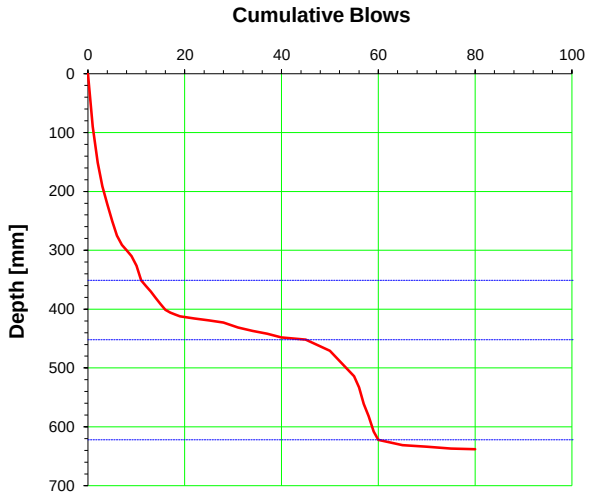
Sample Description:

Sample Number:

Start Depth [mm]: Started at Ground Level

Test Location: DCP03

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Topsoil	11	11	8	351	351
Natural 1	34	45	96	101	452
Natural 2	15	60	23	170	622



Comments: TRL Equation : $Log_{10}(CBR) = 2.480 - 1.057 \times Log_{10}(Strength)$

Approved Signatory:

Name: Matthew Holbourn

Signed: Matthew Holbourn

Position: Geotechnical Engineer

Date Reported: 24th May 2021

Form Number: HD-TRL-DCP ver1

for and behalf of
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Registered Office:
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Bristol BS32 4DF U.K.

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CF11 9AB

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Tel: +44 (0)2920 023665

Email: cardiff@hydrock.com

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

Tested in accordance with In TRL Road Note 31 & 8 and IAN 73/06 (2009 amendment)

Client: AECOM

Client Address: 1 Callaghan Square
Cardiff

Postcode: CF10 5BT

Contact:

Site Name: Ysgol Y Deri

Site Address: Lavernock Road
Cosmeston

Certificate Number:

Client Reference:

Job Number: C-17379-C

Date Received:

Date Tested: 18th May 2021

Test Results:

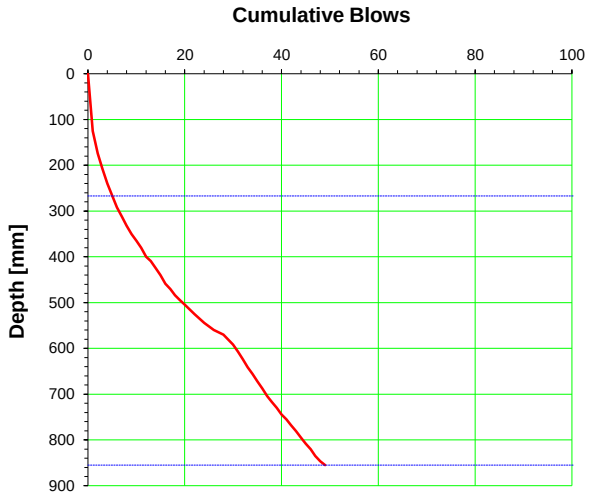
Sample Description:

Sample Number:

Start Depth [mm]: Started at Ground Level

Test Location: DCP04

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Topsoil	5	5	5	267	267
Natural	44	49	19	588	855



Comments: TRL Equation : $Log_{10}(CBR) = 2.480 - 1.057 \times Log_{10}(Strength)$

Approved Signatory:

Name: Matthew Holbourn

Signed: Matthew Holbourn

Position: Geotechnical Engineer

Date Reported: 24th May 2021

Form Number: HD-TRL-DCP ver1

for and behalf of
Hydrock

Registered Office:
Hydrock Consultants Ltd
Over Court Barns
Over Lane Almondsbury
Bristol BS32 4DF U.K.

Hydrock Consultants

Construction
Infrastructure
Environment

Castlebridge 5
5-19 Cowbridge Road East
Cardiff
CF11 9AB

United Kingdom

Tel: +44 (0)2920 023665

Email: cardiff@hydrock.com

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

Tested in accordance with In TRL Road Note 31 & 8 and IAN 73/06 (2009 amendment)

Client: AECOM

Client Address: 1 Callaghan Square
Cardiff

Postcode: CF10 5BT

Contact:

Site Name: Ysgol Y Deri

Site Address: Lavernock Road
Cosmeston

Certificate Number:

Client Reference:

Job Number: C-17379-C

Date Received:

Date Tested: 18th May 2021

Test Results:

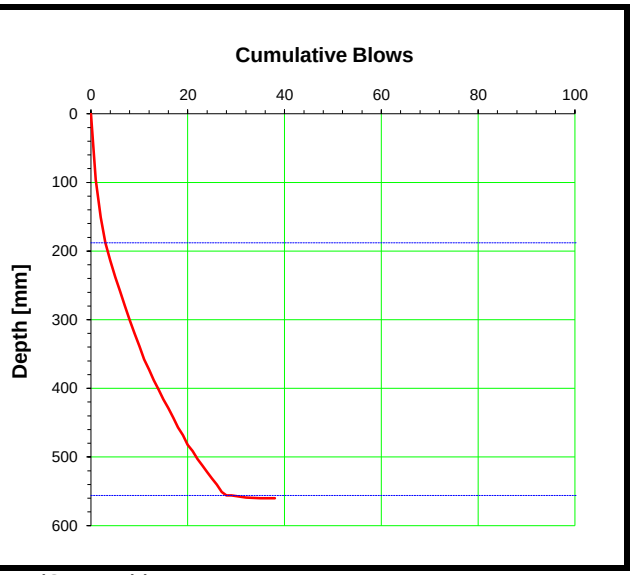
Sample Description:

Sample Number:

Start Depth [mm]: Started at Ground Level

Test Location: DCP05

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Topsoil	3	3	4	188	188
Natural	25	28	18	368	556



Comments: TRL Equation : $Log_{10}(CBR) = 2.480 - 1.057 \times Log_{10}(Strength)$

Approved Signatory:

Name: Matthew Holbourn

Signed: Matthew Holbourn

Position: Geotechnical Engineer

Date Reported: 24th May 2021

Page 1 of 1

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TEST CERTIFICATE

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Tested in accordance with In TRL Road Note 31 & 8 and IAN 73/06 (2009 amendment)

Client: AECOM

Client Address: 1 Callaghan Square
Cardiff

Postcode: CF10 5BT

Contact:

Site Name: Ysgol Y Deri

Site Address: Lavernock Road
Cosmeston

Certificate Number:

Client Reference:

Job Number: C-17379-C

Date Received:

Date Tested: 18th May 2021

Test Results:

Sample Description:

Sample Number:

Start Depth [mm]: Started at Ground Level

Test Location: DCP06

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Topsoil	5	5	6	219	219
Natural	49	54	23	558	777

Comments: TRL Equation : $Log_{10}(CBR) = 2.480 - 1.057 \times Log_{10}(Strength)$

Approved Signatory:

Name: Matthew Holbourn

Signed: Matthew Holbourn

Position: Geotechnical Engineer

for and behalf of
Hydrock

Date Reported: 24th May 2021

Page 1 of 1

Form Number: HD-TRL-DCP ver1

Registered Office:
Hydrock Consultants Ltd
Over Court Barns
Over Lane Almondsbury
Bristol BS32 4DF U.K.

Geotechnical Laboratory Test Results

Laboratory Report

GEO Site & Testing Services Ltd

Contract Number: 54187

Client Ref: **C-17379-C**
Client PO: **P007287**

Report Date: **09-06-2021**

Client **Hydrock Limited**
Hydrock
First Floor
5 Castlebridge
5-19 Cowbridge Road East
Cardiff
CF11 9AB
Tel: 02920 023665 Mob: 07392 081090

Contract Title: **Ysgol Y Deri 2**
For the attention of: **Dickon Morris**

Date Received: **26-05-2021**
Date Completed: **09-06-2021**

Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	7
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	7
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	2
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	2
PSD: Sedimentation by pipette carried out separately BS 1377:1990 - Part 2 : 9.4 - * UKAS	4
BRE Reduced Suite **includes pH, water & acid soluble sulphate and total sulphur** Sub-contracted Test - @ Non Accredited Test	2

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

Approved Signatories:
Emma Sharp (Office Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager)
Shaun Jones (Laboratory manager) - Wayne Honey (Administrative/Quality Assistant)

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

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 54187

Test Description	Qty
Uniaxial Compressive Strength of Rock inc sample prep 54-165mm diameter cores ISRM Suggested Method for determining uniaxial compressive strength - @ Non Accredited Test	3
Samples Received - @ Non Accredited Test	21
Disposal of samples for job	1

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

Approved Signatories:
Emma Sharp (Office Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager)
Shaun Jones (Laboratory manager) - Wayne Honey (Administrative/Quality Assistant)

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

GSTL	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	54187	
Site Name	Ysgol Y Deri 2	
Date Tested	08/06/2021	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
RH01		D	1.00	-	1.20	Brown silty CLAY.
RH02		D	1.00	-	1.20	Brown silty CLAY.
SA01		D	0.90	-	1.10	Brown silty CLAY.
SA03		D	1.20	-	1.70	Brown silty CLAY.
TP01		D	0.40	-	0.60	Brown silty CLAY.
TP02		D	0.40	-	0.70	Brown silty CLAY.
TP07		D	0.40	-	1.00	Brown silty CLAY.
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		

Operators	Checked	09/06/2021	Richard John (Advanced Testing Manager)
Clayton Jenkins	Approved	09/06/2021	Paul Evans (Quality/Technical Manager)

UKAS TESTING
2788

GSTL	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	54187	
Project Location	Ysgol Y Deri 2	
Date Tested	08/06/2021	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
RH01		D	1.00	-	1.20	30	68	23	45	100	CH High Plasticity
RH02		D	1.00	-	1.20	27	69	22	47	100	CH High Plasticity
SA01		D	0.90	-	1.10	26	71	22	49	100	CV Very High Plasticity
SA03		D	1.20	-	1.70	32	67	24	43	100	CH High Plasticity
TP01		D	0.40	-	0.60	31	64	21	43	100	CH High Plasticity
TP02		D	0.40	-	0.70	26	68	21	47	100	CH High Plasticity
TP07		D	0.40	-	1.00	32	71	23	48	100	CV Very High Plasticity
				-							
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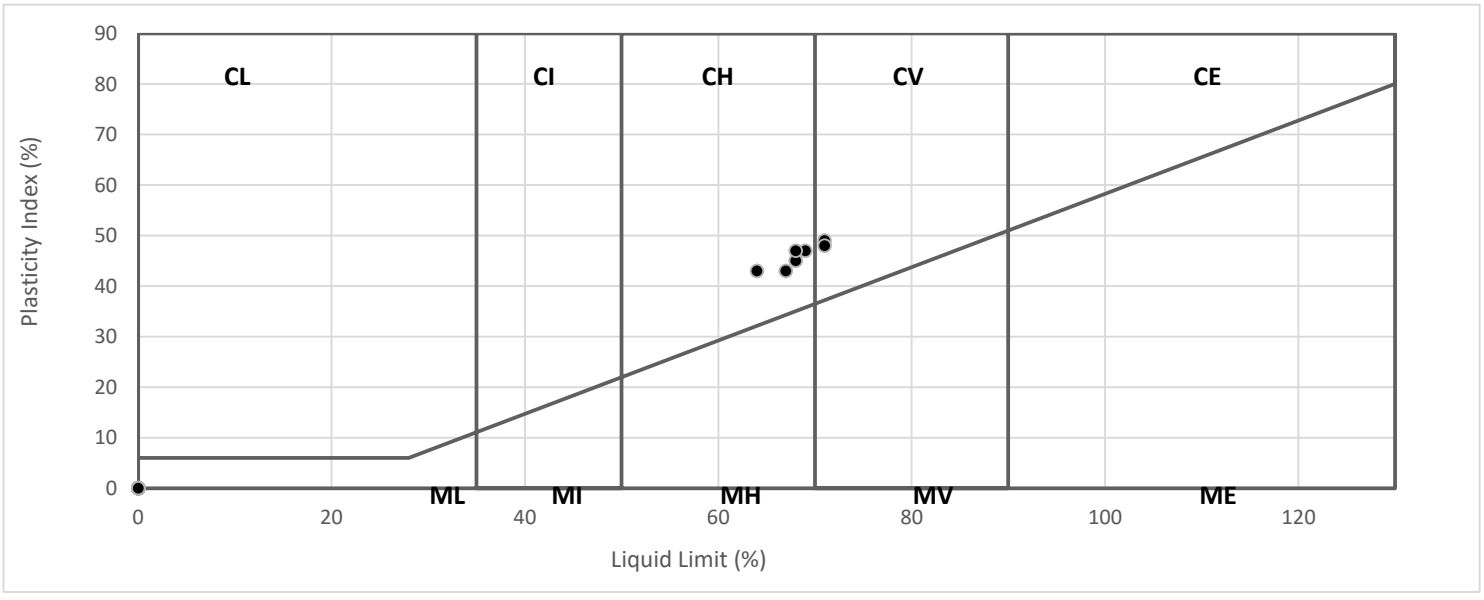
Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

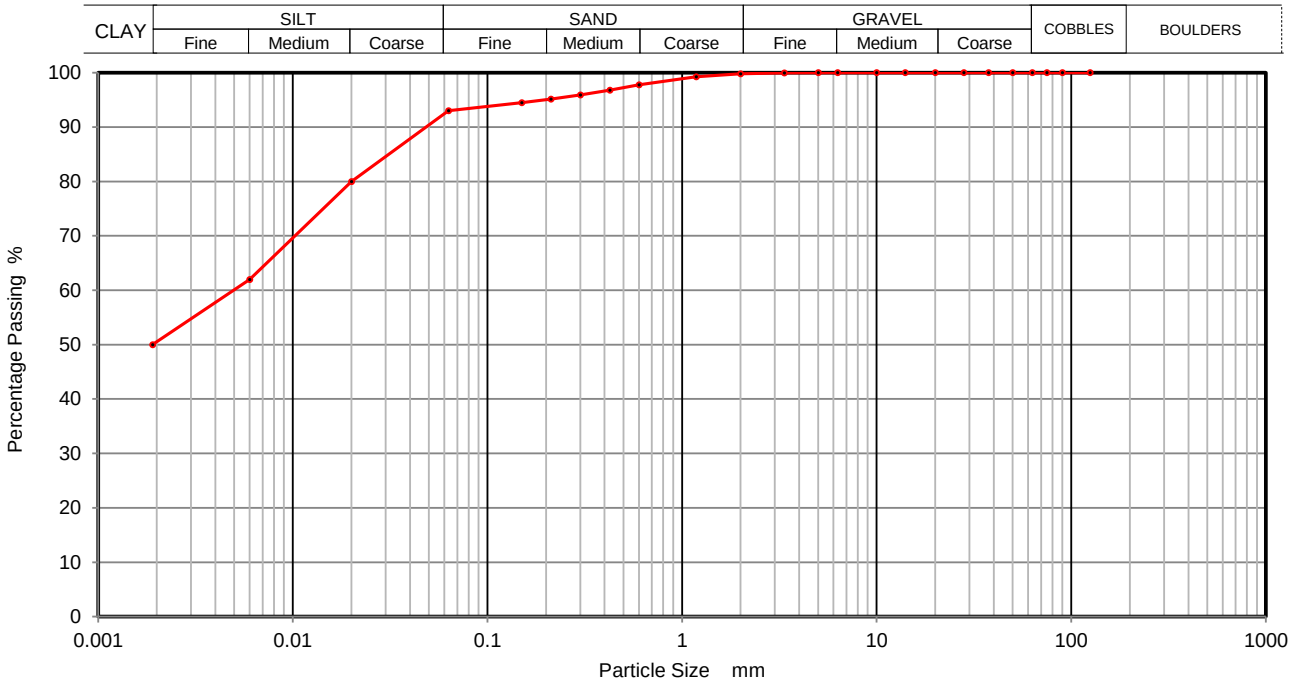
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	09/06/2021	Richard John (Advanced Testing Manager)
Clayton Jenkins	Approved	09/06/2021	Paul Evans (Quality/Technical Manager)

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	54187
		Borehole/Pit No.	TP02
Site Name	Ysgol Y Deri 2	Sample No.	
Soil Description	Greyish brown fine sandy silty CLAY.	Depth Top	0.30
		Depth Base	1.00
Date Tested	07/06/2021	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	80
90	100	0.0060	62
75	100	0.0020	50
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	99		
0.6	98		
0.425	97		
0.3	96		
0.212	95		
0.15	95		
0.063	93		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	7
Silt	43
Clay	50

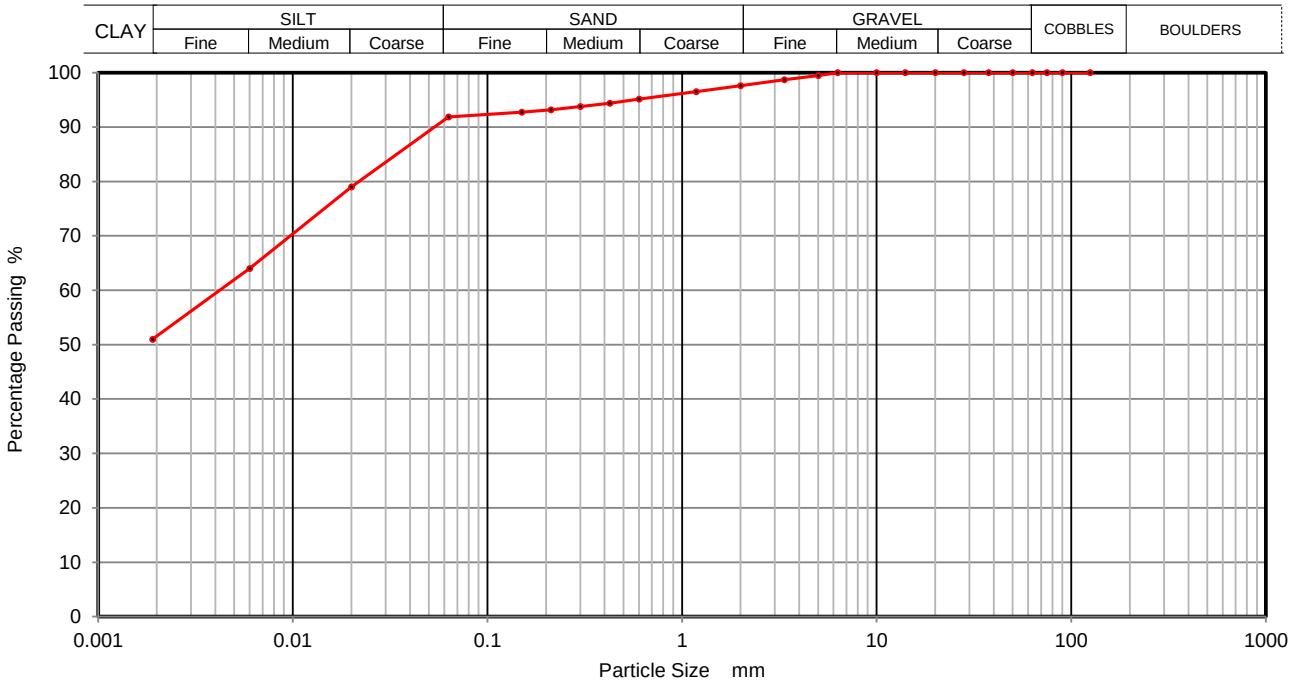
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	08/06/2021	Richard John	
David	Approved	09/06/2021	Paul Evans	

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	54187
		Borehole/Pit No.	TP07
Site Name	Ysgol Y Deri 2	Sample No.	
Soil Description	Greyish brown fine slightly gravelly sandy silty CLAY.	Depth Top	0.30
		Depth Base	1.00
Date Tested	07/06/2021	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	79
90	100	0.0060	64
75	100	0.0020	51
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	95		
0.425	94		
0.3	94		
0.212	93		
0.15	93		
0.063	92		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	6
Silt	41
Clay	51

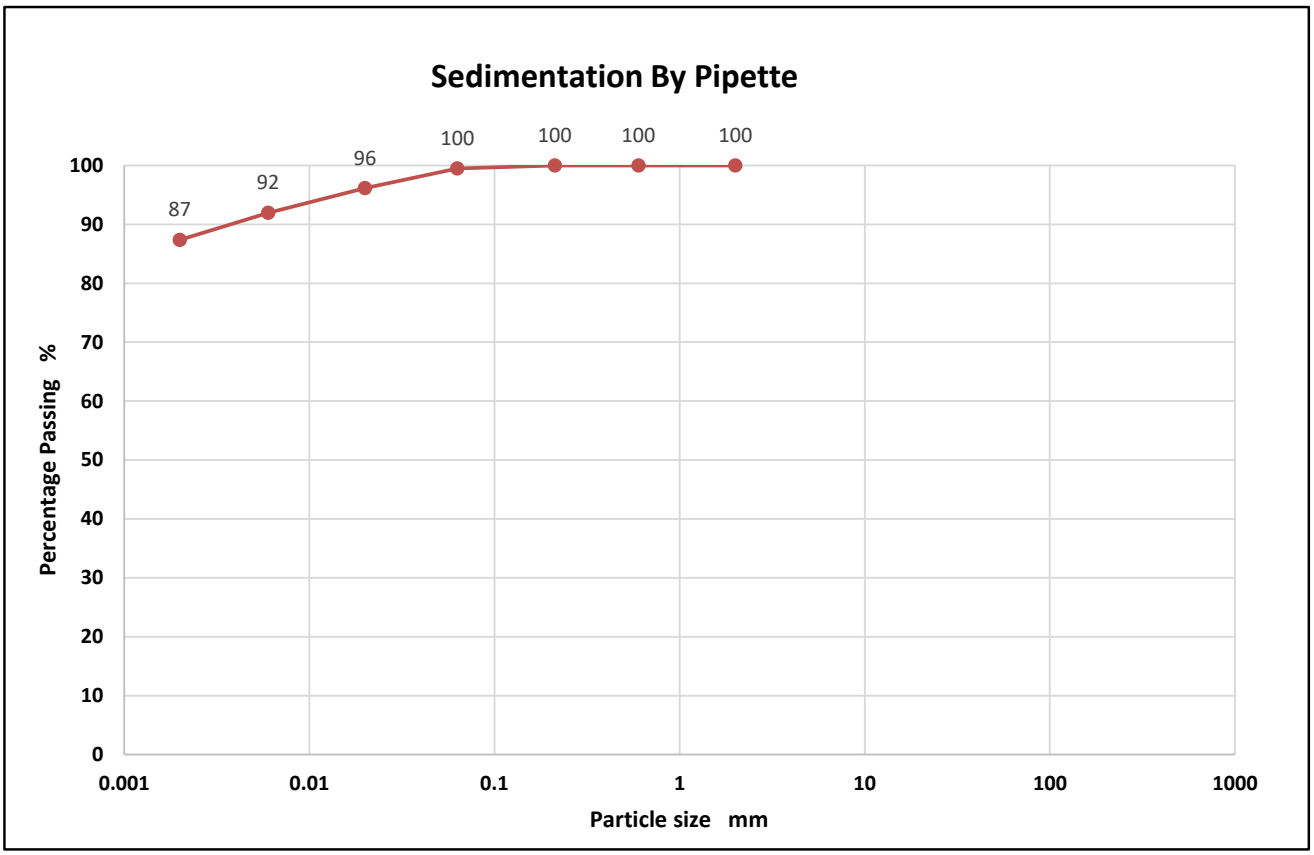
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	08/06/2021	Richard John	
David	Approved	09/06/2021	Paul Evans	

UKAS TESTING
2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	54187
		Borehole/Pit No.	TP07
Site Name	Ysgol y Deri 2	Sample No.	
Soil Description	Brown CLAY	Depth Top	0.40
		Depth Base	1.00
		Sample Type	D



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	100
0.063	100

Sedimentation Analysis

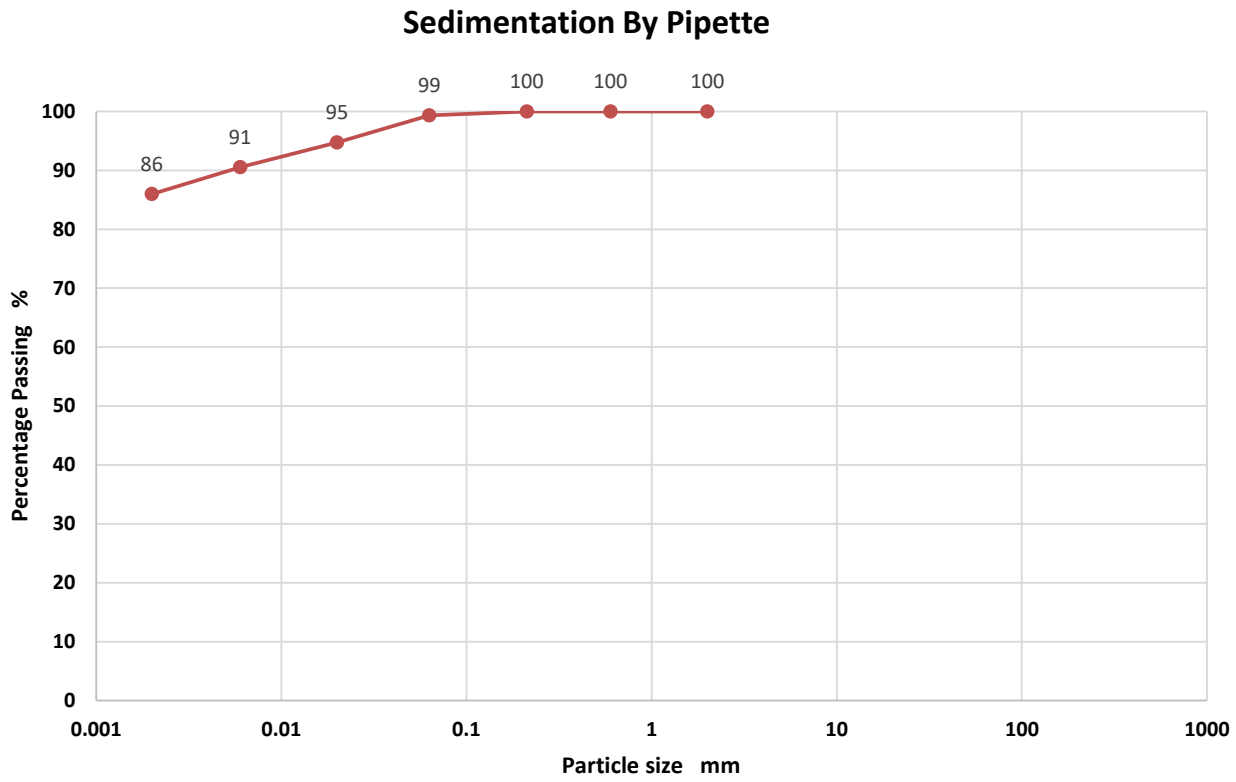
Particle Diameter	Percentage Passing
0.02	96
0.006	92
0.002	87

Soil Fraction	Total Percentage
Gravel	0
Sand	1
Silt	12
Clay	87

Operator	Checked	08/06/2021	Richard John	
Shane	Approved	09/06/2021	Paul Evans	D P Evans

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	54187
		Borehole/Pit No.	SA01
Site Name	Ysgol y Deri 2	Sample No.	
Soil Description	Brown CLAY	Depth Top	0.90
		Depth Base	1.10
		Sample Type	D



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	100
0.063	99

Sedimentation Analysis

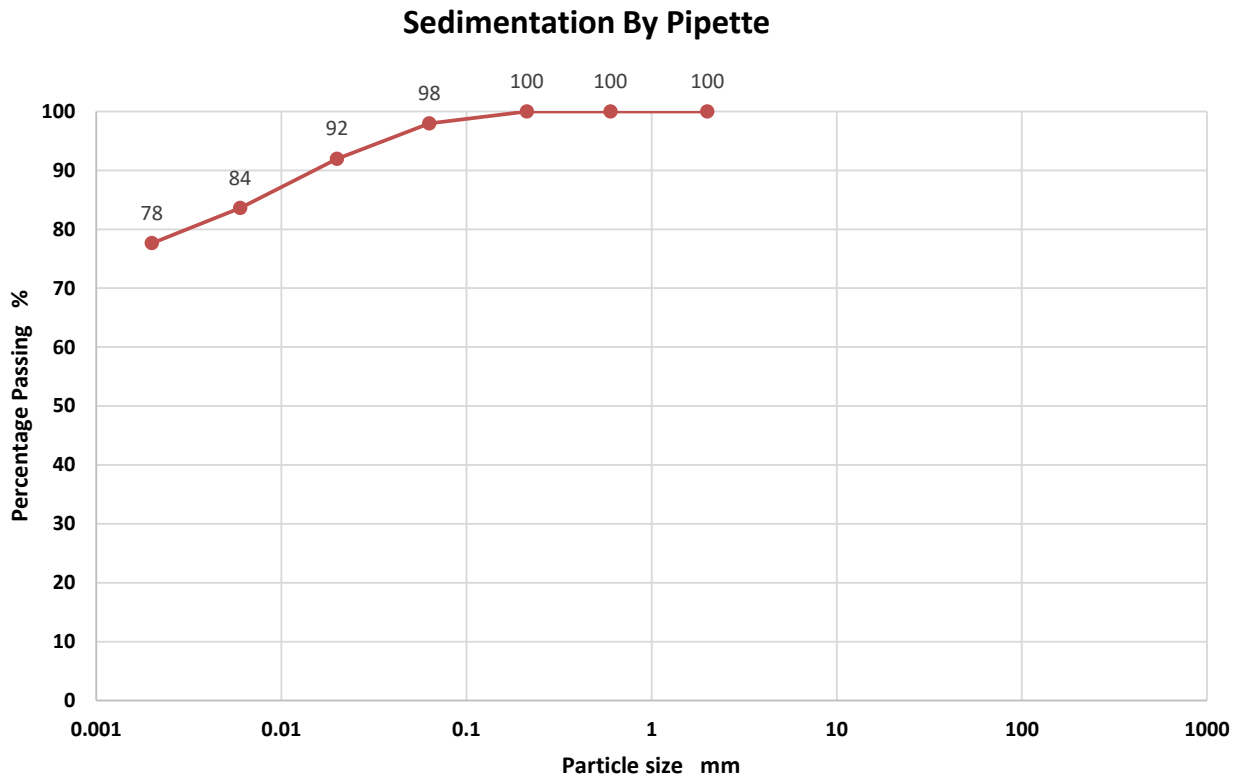
Particle Diameter	Percentage Passing
0.02	95
0.006	91
0.002	86

Soil Fraction	Total Percentage
Gravel	0
Sand	1
Silt	13
Clay	86

Operator	Checked	08/06/2021	Richard John	
Shane	Approved	09/06/2021	Paul Evans	D P Evans

UKAS TESTING
2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	54187
		Borehole/Pit No.	SA03
Site Name	Ysgol y Deri 2	Sample No.	
Soil Description	Brown CLAY	Depth Top	1.20
		Depth Base	1.70
		Sample Type	D



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	100
0.063	98

Sedimentation Analysis

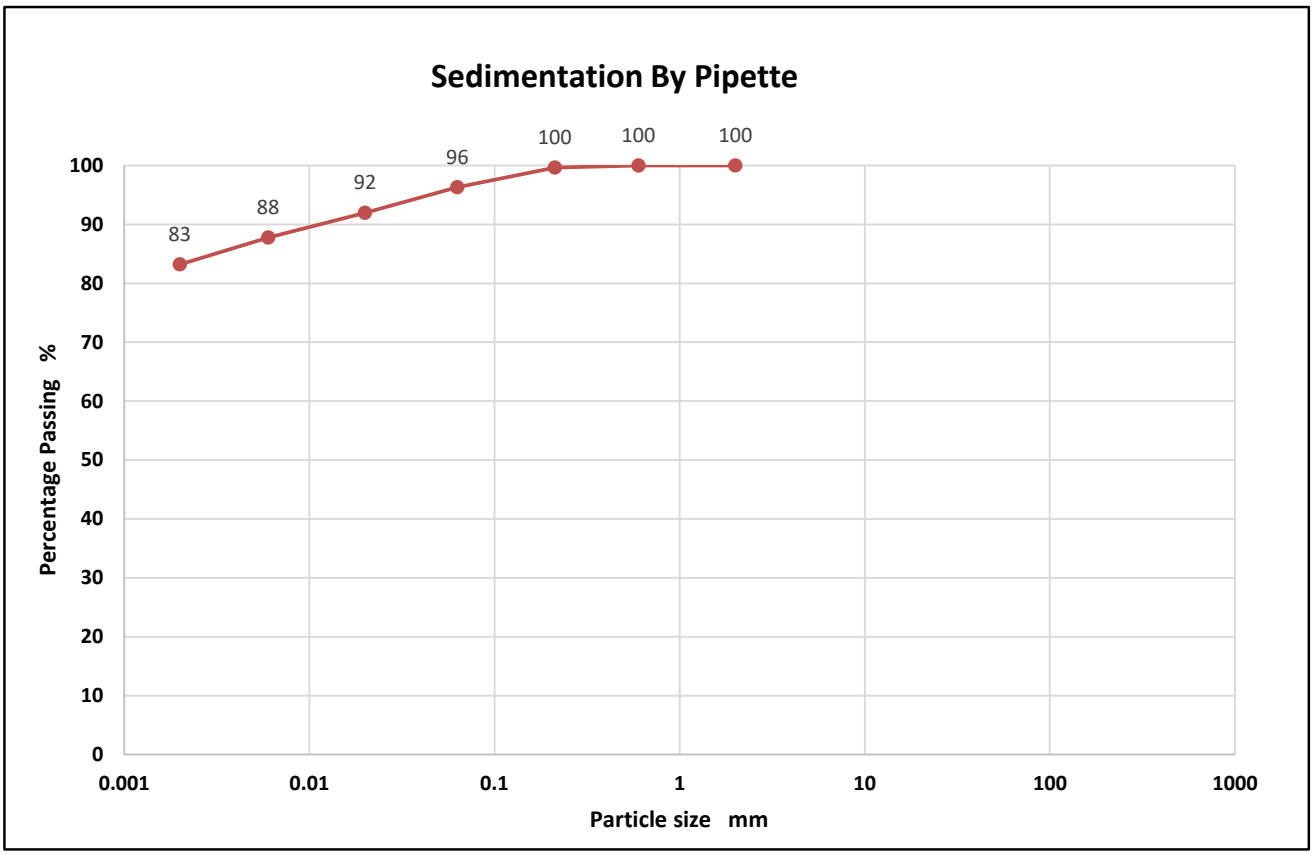
Particle Diameter	Percentage Passing
0.02	92
0.006	84
0.002	78

Soil Fraction	Total Percentage
Gravel	0
Sand	2
Silt	20
Clay	78

Operator	Checked	08/06/2021	Richard John	
Shane	Approved	09/06/2021	Paul Evans	D P Evans

UKAS TESTING
2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	54187
		Borehole/Pit No.	TP07
Site Name	Ysgol y Deri 2	Sample No.	
Soil Description	Brown CLAY	Depth Top	0.40
		Depth Base	1.00
		Sample Type	D



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	100
0.063	96

Sedimentation Analysis

Particle Diameter	Percentage Passing
0.02	92
0.006	88
0.002	83

Soil Fraction	Total Percentage
Gravel	0
Sand	4
Silt	13
Clay	83

Operator	Checked	08/06/2021	Richard John	
Shane	Approved	09/06/2021	Paul Evans	D P Evans

UKAS TESTING 2788

GSTL	Determination of Unconfined Compressive Strength ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979	
Contract Number	54187	
Site Name	Ysgol Y Deri 2	
Sample Preperation	Sawing and Grinding	
Date Tested	03/06/2021	

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
RH01	2.36		2.48	72.7	121.2	1321.5	1.8	2.63	2.58	188.3	45.4	Multiple Fracture
RH02	2.36		2.48	72.7	125.6	1389.0	1.1	2.66	2.63	224.4	54.1	Axial Splitting
RH02	3.92		4.09	72.9	168	1838.5	1.3	2.62	2.59	118.8	28.5	Axial Splitting

Key	Reported As
Diameter	mm
Length	mm
Initial Mass	g
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Load Failure	kN
Maximum Strength	MPa

Operators	Checked	08/06/2021	Emma Sharp	
Julian	Approved	09/06/2021	Paul Evans	

Certificate of Analysis

Certificate Number	21-11496	*Issued:*	08-Jun-21

Client GEO Site and Testing Services Ltd
Unit 4
Heol Aur
Dafen Ind Est
Dafen
Carmarthenshire
SA14 8QN

Our Reference 21-11496

Client Reference C-17379-C

Order No (not supplied)

Contract Title Ysgol Y Deri 2

Description 2 Soil samples.

Date Received 01-Jun-21

Date Started 01-Jun-21

Date Completed 08-Jun-21

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 21-11496
Client Ref C-17379-C
Contract Title Ysgol Y Deri 2

			Lab No	1855363	1855364
			.Sample ID	TP04	TP05
			Depth	1.00-1.50	1.10-1.60
			Other ID		
			Sample Type	D	D
			Sampling Date	n/s	n/s
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Inorganics					
pH	DETSC 2008#		pH	7.8	8.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	24	22
Sulphur as S, Total	DETSC 2320	0.01	%	0.04	0.06
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.07	0.07

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 21-11496
Client Ref C-17379-C
Contract Ysgol Y Deri 2

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1855363	TP04 1.00-1.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
1855364	TP05 1.10-1.60 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: Ysgol Y Deri 2
Client: AECOM
Test Location SA01 **Date of start** 18/05/2021 **Date at end** 18/05/2021

Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	2.300m	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)	1.200m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	10.00	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	10.05	Time at End of Filling		Time at End of Filling	
Depth from Surface to Water (D_{TW})	0.610m	Depth below Surface to Water (D_{TW})		Depth below Surface to Water (D_{TW})	
Water Depth (W_D)	0.590m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	0.814m³	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	0.814m³	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds
1	10.050	0.610	0
1	10.120	0.570	420
1	10.270	0.550	1320
1	10.530	0.540	2880
1	11.120	0.500	4020
1	12.560	0.480	10260
1	13.350	0.480	12600
			12600
			12600
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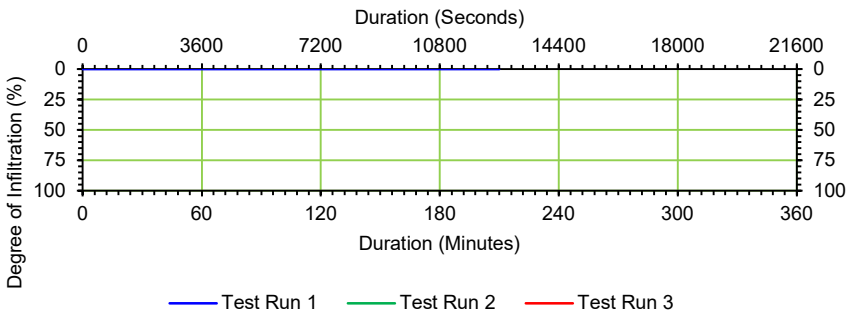
			12600
			12600
			12600
			12600
			12600

Test Run 1		Test Run 2		Test Run 3	
25% water loss (75% full)	0.758m	**25% water loss (75% full)**	-	**25% water loss (75% full)**	-
50% water loss (50% full)	0.905m	**50% water loss (50% full)**	-	**50% water loss (50% full)**	-
75% water loss (25% full)	1.053m	**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	0.407m³	**Vp 75-25**	-	**Vp 75-25**	-
ap 50 (Actual area from test)	3.091m³	**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	Dickon Morris
	SIGN	Dickon Morris
	DATE	18/05/2021
Calculated By	PRINT	Dickon Morris
	SIGN	Dickon Morris
	DATE	09/06/2021
Checked by	PRINT	Matthew Holbourn
	SIGN	Matthew Holbourn
	DATE	15/06/2021

1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: YYD2
Client: AECOM
Test Location SA01a **Date of start** 18/05/2021 **Date at end** 18/05/2021

Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	1.400m	Trial Pit Length (L)		Trial Pit Length (L)	
Trial Pit Breadth / Width (B)	1.100m	Trial Pit Breadth / Width (B)		Trial Pit Breadth / Width (B)	
Effective Depth (D)	0.400m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	10.39	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	10.40	Time at End of Filling		Time at End of Filling	
Depth from Surface to Water (D_{TW})	0.160m	Depth below Surface to Water (D_{TW})		Depth below Surface to Water (D_{TW})	
Water Depth (W_D)	0.240m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	0.370m³	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	0.370m³	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds
1	10.400	0.160	0
1	10.470	0.160	420
1	10.550	0.160	900
1	11.130	0.160	1980
1	12.540	0.160	8040
1	13.370	0.160	10620
1	14.330	0.160	13980
1	15.510	0.160	18660
			18660
			18660
			18660
			18660
			18660
			18660
			18660
			18660
			18660
			18660
			18660
			18660
			18660
			18660
			18660
			18660

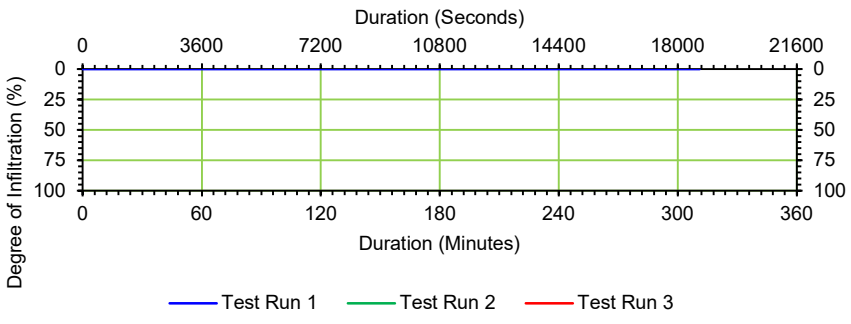
25% water loss (75% full)	0.220m	**25% water loss (75% full)**	-
50% water loss (50% full)	0.280m	**50% water loss (50% full)**	-
75% water loss (25% full)	0.340m	**75% water loss (25% full)**	-
25% time (seconds)	-	**25% time (seconds)**	-
75% time (seconds)	-	**75% time (seconds)**	-
Vp 75-25	0.185m³	**Vp 75-25**	-
ap 50 (Actual area from test)	2.140m³	**ap 50 (Actual area from test)**	-
tp 75 - 25		**tp 75 - 25**	
Soil Infiltration Rate	-	**Soil Infiltration Rate**	-

Test Run 3		
Pit Dimensions (m)		
Trial Pit Length (L)		
Trial Pit Breadth / Width (B)		
Effective Depth (D)		
Time at Start of Filling		
Time at End of Filling		
Depth below Surface to Water (D_{TW})		
Water Depth (W_D)	-	
Maximum Fill Volume (V_W)	-	
Gravel used to backfill Test Pit	No	
Porosity of Gravel Backfill (P_t)		
Corrected Water Volume (V_{WC})	-	

Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds

25% water loss (75% full)	-	**25% water loss (75% full)**	-
50% water loss (50% full)	-	**50% water loss (50% full)**	-
75% water loss (25% full)	-	**75% water loss (25% full)**	-
25% time (seconds)	-	**25% time (seconds)**	-
75% time (seconds)	-	**75% time (seconds)**	-
Vp 75-25	-	**Vp 75-25**	-
ap 50 (Actual area from test)	-	**ap 50 (Actual area from test)**	-
tp 75 - 25		**tp 75 - 25**	
Soil Infiltration Rate	-	**Soil Infiltration Rate**	-



Form completed by		
Tested By	PRINT	Dickon Morris
	SIGN	Dickon Morris
	DATE	18/05/2021
Calculated By	PRINT	Dickon Morris
	SIGN	Dickon Morris
	DATE	09/06/2021
Checked by	PRINT	Matthew Holbourn
	SIGN	Matthew Holbourn
	DATE	15/06/2021

1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: Ysgol Y Deri 2
Client: AECOM
Test Location SA02 **Date of start** 18/05/2021 **Date at end** 18/05/2021

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)	0.600m	Trial Pit Breadth / Width (B)		Trial Pit Breadth / Width (B)	
Effective Depth (D)	1.750m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	13.06	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	13.07	Time at End of Filling		Time at End of Filling	
Depth from Surface to Water (D_{TW})	1.020m	Depth below Surface to Water (D_{TW})		Depth below Surface to Water (D_{TW})	
Water Depth (W_D)	0.730m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	0.788m³	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	0.788m³	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds
1	13.070	1.020	0
1	13.230	1.020	960
1	14.250	1.020	4680
1	15.310	1.020	8640
			8640
			8640
			8640
			8640
			8640
			8640
			8640
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			8640
			8640
			8640
			8640
			8640

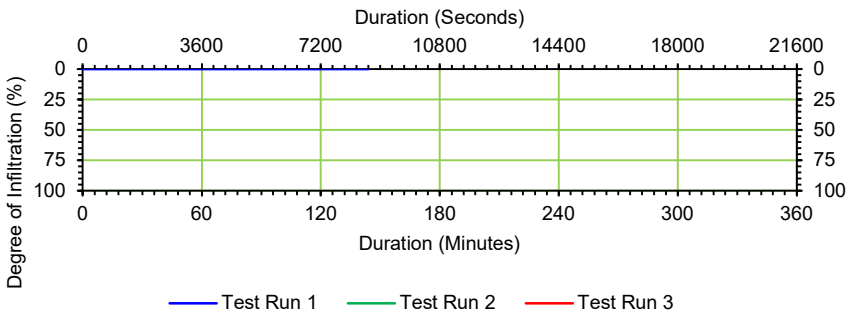
Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds

Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds

25% water loss (75% full)	1.203m	**25% water loss (75% full)**	-	**25% water loss (75% full)**	-
50% water loss (50% full)	1.385m	**50% water loss (50% full)**	-	**50% water loss (50% full)**	-
75% water loss (25% full)	1.568m	**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	0.394m³	**Vp 75-25**	-	**Vp 75-25**	-
ap 50 (Actual area from test)	2.832m³	**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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Tested By	PRINT	Dickon Morris
	SIGN	Dickon Morris
	DATE	18/05/2021
Calculated By	PRINT	Dickon Morris
	SIGN	Dickon Morris
	DATE	09/06/2021
Checked by	PRINT	Matthew Holbourn
	SIGN	Matthew Holbourn
	DATE	15/06/2021

1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: Ysgol Y Deri 2
Client: AECOM
Test Location SA03a **Date of start** 18/05/2021 **Date at end** 18/05/2021

Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	1.600m	Trial Pit Length (L)		Trial Pit Length (L)	
Trial Pit Breadth / Width (B)	1.400m	Trial Pit Breadth / Width (B)		Trial Pit Breadth / Width (B)	
Effective Depth (D)	0.500m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	12.04	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	12.05	Time at End of Filling		Time at End of Filling	
Depth from Surface to Water (D_{TW})	0.220m	Depth below Surface to Water (D_{TW})		Depth below Surface to Water (D_{TW})	
Water Depth (W_D)	0.280m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	0.627m³	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	0.627m³	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds
1	12.050	0.220	0
1	12.290	0.220	1440
1	12.500	0.220	2700
1	13.260	0.220	4860
1	14.280	0.220	8580
			8580
			8580
			8580
			8580
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			8580
			8580
			8580
			8580
			8580
			8580
			8580
			8580
			8580
			8580

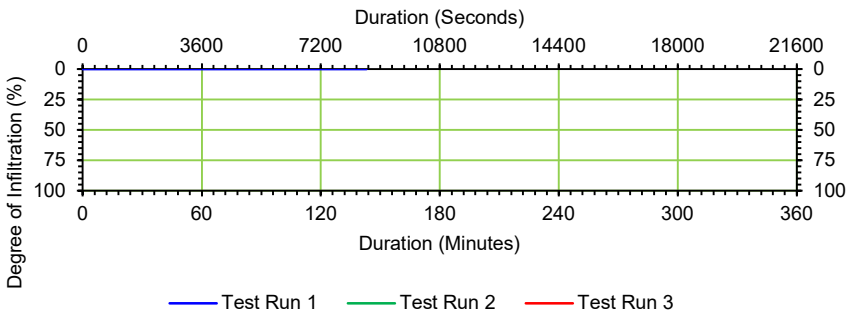
Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds

Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds

25% water loss (75% full)		0.290m	**25% water loss (75% full)**		-	**25% water loss (75% full)**		-
50% water loss (50% full)		0.360m	**50% water loss (50% full)**		-	**50% water loss (50% full)**		-
75% water loss (25% full)		0.430m	**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		0.314m³	**Vp 75-25**		-	**Vp 75-25**		-
ap 50 (Actual area from test)		3.080m³	**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	Dickon Morris
	DATE	26/05/2021
Calculated By	PRINT	Dickon Morris
	SIGN	Dickon Morris
	DATE	09/06/2021
Checked by	PRINT	Matthew Holbourn
	SIGN	Matthew Holbourn
	DATE	15/06/2021

1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: Ysgol Y Deri 2
Client: AECOM
Test Location SA04a **Date of start** 18/05/2021 **Date at end** 18/05/2021

Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	1.500m	Trial Pit Length (L)		Trial Pit Length (L)	
Trial Pit Breadth / Width (B)	1.300m	Trial Pit Breadth / Width (B)		Trial Pit Breadth / Width (B)	
Effective Depth (D)	0.600m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	12.26	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	12.27	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)	0.100m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	0.195m³	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	0.195m³	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds
1	12.270	0.500	0
1	12.520	0.500	1500
1	13.290	0.500	3720
1	14.300	0.500	7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380
			7380

25% water loss (75% full)	0.525m	
50% water loss (50% full)	0.550m	
75% water loss (25% full)	0.575m	
25% time (seconds)	-	
75% time (seconds)	-	
Vp 75-25	0.098m³	
ap 50 (Actual area from test)	2.230m³	
tp 75 - 25		
Soil Infiltration Rate	-	

Time to soakaway

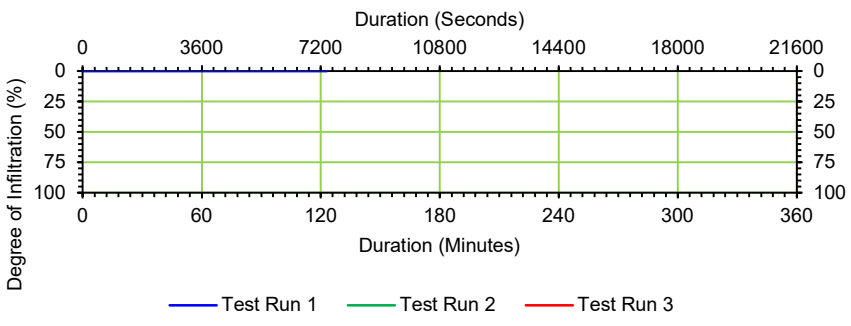
Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds

25% water loss (75% full)	-	
50% water loss (50% full)	-	
75% water loss (25% full)	-	
25% time (seconds)	-	
75% time (seconds)	-	
Vp 75-25	-	
ap 50 (Actual area from test)	-	
tp 75 - 25		
Soil Infiltration Rate	-	

Time to soakaway

Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds

25% water loss (75% full)	-	
50% water loss (50% full)	-	
75% water loss (25% full)	-	
25% time (seconds)	-	
75% time (seconds)	-	
Vp 75-25	-	
ap 50 (Actual area from test)	-	
tp 75 - 25		
Soil Infiltration Rate	-	



Form completed by		
Tested By	PRINT	Dickon Morris
	SIGN	Dickon Morris
	DATE	18/05/2021
Calculated By	PRINT	Dickon Morris
	SIGN	Dickon Morris
	DATE	09/06/2021
Checked by	PRINT	Matthew Holbourn
	SIGN	Matthew Holbourn
	DATE	15/06/2021

Appendix E

Site Monitoring Data and Ground Gas Risk Assessment

Ground Gas Risk Assessment

Hydrock

Site: Ysgol Y Deri 2 (YYD2)
Job number: 17379
Client: AECOM

Gas analyser: GA5000
Equipment check OK: Y
Service in date: Y
Calibration check OK: Y
Name of person monitoring: Gareth Gardner-Dixon

Weather Conditions
24/05/2021 -Overcast and dry. (Ground was wet and boggy on first round.)
07/06/2021 - Sunny and dry.
21/06/2021 - Overcast and dry
05/07/2021 - Overcast and dry
19/07/2021 - Sunny and dry
02/08/2021 - Overcast and dry

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. 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	Volume of headspace in BH (well pipie & filter pack) (m^3)	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) Initial	CH_4 (%v/v) Steady	CH_4 (%LEL) Initial	CH_4 (%LEL) Steady	CO_2 (%v/v) Initial	CO_2 (%v/v) Steady	O_2 (%v/v) Initial	O_2 (%v/v) Steady	Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
								Max. individual values:				**0.2**		**0.0**		**0.0**		**4.2**		**20.8**	**0**	**0.0048**	
								Min. individual values:				0.0		0.0		0.0		0.1		6.5	0	0	**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**	**0.0084**	
24/05/21	12:26	RH01	S	5.5	0.2		0.00039	997	R	-3.77	0.0	0.0		0	0	0	0	0.8	0.8	20.5	20.5	0	0	Wet
07/06/21	09:27	RH01	S	5.5	1.45		0.00285	1022	S	0.02	0.1	0.1		0	0	0	0	0.6	0.6	20.2	20.2	0	0.0006	Dry
21/06/21	08:45	RH01	s	5.4	1.74		0.00342	1011	s	14.11	0.0	0.0		0	0	0	0	0.3	0.3	20.7	20.7	0	0	Dry
05/07/21	09:23	RH01	S	5.4	1.76		0.00346	1005	S	13.70	0.2	0.2		0	0	0	0	0.4	0.4	20.3	20.3	0	0.0008	Dry
19/07/21	08:00	RH01	S	5.4	1.85		0.00363	1021	F	0.02	0.1	0.1		0	0	0	0	0.4	0.4	20.2	20.2	0	0.0004	Dry
02/08/21	09:30	RH01	S	5.4	1.85		0.00363		F	-3	0.1	0.1		0	0	0	0	3	3	18.6	18.6	0	0.003	Dry
24/05/21	12:45	RH02	S	5.7	0.2		0.00039	998	R	34.39	0.1	0.1		0	0	0	0	0.2	0.2	20.4	20.4	0	0.0002	Wet
07/06/21	09:48	RH02	S	5.7	1.37		0.00269	1023	S	0.15	0.1	0.1		0	0	0	0	4.3	4.2	8.7	8.7	0	0.0042	Dry
21/06/21	09:00	RH02	s	5.2	1.44		0.00283	1011	s	-0.02	0.2	0.2		0	0	0	0	0.8	0.8	20.8	20.8	0	0.0016	Dry
05/07/21	09:35	RH02	S	5.2	3.03		0.00595	1005	S	10.17	0.2	0.2		0	0	0	0	2.4	2.4	15.1	15.1	0	0.0048	Dry
19/07/21	08:15	RH02	S	5.2	2.82		0.00554	1021	F	-0.07	0.1	0.1		0	0	0	0	2.7	2.7	15.1	15.1	0	0.0027	Dry
02/08/21	09:45	RH02	S	5.1	2.82		0.00554		F	0	0.2	0.2		0	0	0	0	2	2	18.1	18.1	0	0.004	Dry
24/05/21	13:00	RH03	S	5.5	0.21		0.00041	1000	R	34.16	0.1	0.1		0	0	0	0	0.1	0.1	20	20	0	0.0001	Wet
07/06/21	10:05	RH03	S	5.5	2.08		0.00408	1023	S	12.74	0.0	0.0		0	0	0	0	0.2	0.2	11.2	11.2	0	0	Dry
21/06/21	09:15	RH03	s	5.2	2.24		0.00440	1011	s	12.50	0.2	0.2		0	0	0	0	0.8	0.8	6.5	6.5	0	0.0016	Dry
05/07/21	09:45	RH03	S	5.2	2		0.00393	1005	S	12.33	0.2	0.2		0	0	0	0	0.9	0.9	7.8	7.8	0	0.0018	Dry
19/07/21	08:30	RH03	S	5.2	2.37		0.00465	1021	F	10.77	0.2	0.2		0	0	0	0	0.7	0.7	10.4	10.4	0	0.0014	Dry
02/08/21	10:00	RH03	S	5.2	2.1		0.00412		F	-12	0.2	0.2		0	0	0	0	1.1	1.1	10.6	10.6	0	0.0022	Dry

Appendix F

Contamination Test Results and Statistical Analysis

Contamination Test Results

Dickon Morris
Hydrock Consultants Ltd
Over Court Barns
Over Lane
Bristol
BS32 4DF

t: 01454 619533
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Analytical Report Number : 21-77003

Project / Site name:	Ysgol Y Deri 2	**Samples received on:**	25/05/2021
Your job number:	C-17379-C	**Samples instructed on/ Analysis started on:**	25/05/2021
Your order number:	PO07287	**Analysis completed by:**	02/06/2021
Report Issue Number:	1	**Report issued on:**	02/06/2021
Samples Analysed:	5 leachate samples - 17 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: 21-77003
Project / Site name: Ysgol Y Deri 2
Your Order No: PO07287

Lab Sample Number				1881955	1881956	1881957	1881958	1881959
Sample Reference				RH01	SA01	SA01	SA02	SA03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.50	0.00-0.20	0.30-0.50	0.00-0.30	0.00-0.20
Date Sampled				21/05/2021	19/05/2021	19/05/2021	19/05/2021	19/05/2021
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	22	27	12	27	30
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0	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	8.2	-	8.3	6.9	7.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1600	-	-	-	-
Total Sulphate as SO4	%	0.005	MCERTS	0.161	-	-	-	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.23	-	0.023	0.044	0.030
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	230	-	-	-	-
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	28	-	-	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	14	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	660	-	-	-	-
Total Sulphur	%	0.005	MCERTS	0.066	-	-	-	-
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	-	-	-	-
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.0081	-	0.0024	0.023	0.034
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	5.3	-	-	-	-
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	-	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	0.99
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	0.58
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	0.76
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	10
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	0.57
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	8.6
Pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	6.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	2.2
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	2.6
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	3.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	1.0
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	2.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	1.4
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	0.42
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	1.5
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	-	< 0.80	< 0.80	42.5

Analytical Report Number: 21-77003
Project / Site name: Ysgol Y Deri 2
Your Order No: PO07287

Lab Sample Number				1881955	1881956	1881957	1881958	1881959
Sample Reference				RH01	SA01	SA01	SA02	SA03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.50	0.00-0.20	0.30-0.50	0.00-0.30	0.00-0.20
Date Sampled				21/05/2021	19/05/2021	19/05/2021	19/05/2021	19/05/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	-	8.2	16	14
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2.0	-	0.68	1.7	1.6
Boron (water soluble)	mg/kg	0.2	MCERTS	3.0	-	0.7	2.6	1.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.3	-	< 0.2	0.9	1.0
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	-	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	71	-	15	40	39
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	72	-	15	40	39
Copper (aqua regia extractable)	mg/kg	1	MCERTS	51	-	18	38	34
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25	-	8.6	51	66
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	86	-	23	36	34
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	55	-	13	49	51
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	180	-	17	110	150
Magnesium (water soluble)	mg/kg	5	NONE	28	-	-	-	-
Magnesium (leachate equivalent)	mg/l	2.5	NONE	14	-	-	-	-
Pesticide and Herbicide Screen								
GCMS Pesticide Screen		N/A	NONE	-	None Detected	-	None Detected	None Detected

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-77003
Project / Site name: Ysgol Y Deri 2
Your Order No: PO07287

Lab Sample Number				1881960	1881961	1881962	1881963	1881964
Sample Reference				SA04	SA04	TP01	TP01	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.20	0.20-0.50	0.00-0.30	0.30-0.50	0.30-0.60
Date Sampled				19/05/2021	19/05/2021	21/05/2021	21/05/2021	21/05/2021
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	31	16	22	18	15
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0	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	6.6	8.2	7.9	8.3	8.4
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	-	-	-	800	900
Total Sulphate as SO4	%	0.005	MCERTS	-	-	-	0.080	0.090
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.038	0.029	0.073	0.035	0.038
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-	34.6	38.4
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	-	-	-	4.7	5.6
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	-	2.4	2.8
Total Sulphur	mg/kg	50	MCERTS	-	-	-	360	430
Total Sulphur	%	0.005	MCERTS	-	-	-	0.036	0.043
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
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.038	0.0039	0.039	-	0.0039
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	-	-	-	3.1	2.1
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	-	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.8	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	3.8	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	3.4	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	6.1	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.74	< 0.05	48	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.31	< 0.05	13	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	2.3	< 0.05	53	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	1.9	< 0.05	41	-	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.4	< 0.05	25	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	1.2	< 0.05	24	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.5	< 0.05	28	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.45	< 0.05	8.2	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.93	< 0.05	18	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.59	< 0.05	10	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.25	< 0.05	3.5	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.66	< 0.05	11	-	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	12.3	< 0.80	298	-	< 0.80

Analytical Report Number: 21-77003
Project / Site name: Ysgol Y Deri 2
Your Order No: PO07287

Lab Sample Number				1881960	1881961	1881962	1881963	1881964
Sample Reference				SA04	SA04	TP01	TP01	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.20	0.20-0.50	0.00-0.30	0.30-0.50	0.30-0.60
Date Sampled				19/05/2021	19/05/2021	21/05/2021	21/05/2021	21/05/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	9.1	13	-	9.6
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	0.97	1.6	-	0.66
Boron (water soluble)	mg/kg	0.2	MCERTS	4.5	1.1	2.8	-	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.1	< 0.2	0.8	-	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	-	< 1.2
Chromium (III)	mg/kg	1	NONE	40	20	30	-	13
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	21	30	-	14
Copper (aqua regia extractable)	mg/kg	1	MCERTS	48	34	39	-	30
Lead (aqua regia extractable)	mg/kg	1	MCERTS	67	9.9	42	-	8.9
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	39	31	29	-	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	55	23	45	-	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	37	130	-	22
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	11	5.5
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	-	5.6	2.7
Pesticide and Herbicide Screen								
GCMS Pesticide Screen		N/A	NONE	None Detected	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-77003
Project / Site name: Ysgol Y Deri 2
Your Order No: PO07287

Lab Sample Number				1881965	1881966	1881967	1881968	1881969
Sample Reference				TP03	TP04	TP04	TP05	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.50	0.00-0.20	0.20-0.50	0.00-0.20	0.30-0.50
Date Sampled				21/05/2021	19/05/2021	19/05/2021	19/05/2021	19/05/2021
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	19	32	18	34	18
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0	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	6.5	8.5	6.6	8.0
Free Cyanide	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	510	-	430	-	-
Total Sulphate as SO4	%	0.005	MCERTS	0.051	-	0.043	-	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.038	0.059	0.033	0.066	0.037
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	37.6	-	32.8	-	-
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	7.5	-	6.0	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.8	-	3.0	-	-
Total Sulphur	mg/kg	50	MCERTS	270	-	340	-	-
Total Sulphur	%	0.005	MCERTS	0.027	-	0.034	-	-
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	-	-
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	0.032	0.015	0.038	0.0074
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	4.3	-	2.2	-	-
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	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	0.97	< 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	1.8	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	2.1	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	8.5	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	2.1	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	5.6	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	4.2	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	2.1	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	1.6	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	2.0	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	0.72	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	1.5	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	0.84	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	0.25	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	0.83	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	< 0.80	< 0.80	34.9	< 0.80

Analytical Report Number: 21-77003
Project / Site name: Ysgol Y Deri 2
Your Order No: PO07287

Lab Sample Number				1881965	1881966	1881967	1881968	1881969
Sample Reference				TP03	TP04	TP04	TP05	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.50	0.00-0.20	0.20-0.50	0.00-0.20	0.30-0.50
Date Sampled				21/05/2021	19/05/2021	19/05/2021	19/05/2021	19/05/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	16	10	16	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	1.5	1.2	1.5	1.7
Boron (water soluble)	mg/kg	0.2	MCERTS	-	3.5	1.5	3.5	2.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	1.2	1.4	1.0	0.8
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	-	48	29	43	37
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	48	29	43	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	37	45	30	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	53	19	64	29
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	-	36	42	34	43
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	58	47	55	45
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	170	450	110	91
Magnesium (water soluble)	mg/kg	5	NONE	12	-	10	-	-
Magnesium (leachate equivalent)	mg/l	2.5	NONE	6.2	-	5.2	-	-
Pesticide and Herbicide Screen								
GCMS Pesticide Screen		N/A	NONE	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-77003
Project / Site name: Ysgol Y Deri 2
Your Order No: PO07287

Lab Sample Number				1881970	1881971
Sample Reference				TP06	TP07
Sample Number				None Supplied	None Supplied
Depth (m)				0.00-0.30	0.30-0.50
Date Sampled				21/05/2021	21/05/2021
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	30	14
Total mass of sample received	kg	0.001	NONE	1.0	1.0
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected
General Inorganics					
pH - Automated	pH Units	N/A	MCERTS	-	8.6
Free Cyanide	mg/kg	1	MCERTS	-	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	-	-
Total Sulphate as SO4	%	0.005	MCERTS	-	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.025
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-
Total Sulphur	%	0.005	MCERTS	-	-
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	-	-
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	0.0050
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	-	-
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	-	-
Total Phenols					
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0
Speciated PAHs					
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05
Total PAH					
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	< 0.80

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Project / Site name: Ysgol Y Deri 2
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Lab Sample Number				1881970	1881971
Sample Reference				TP06	TP07
Sample Number				None Supplied	None Supplied
Depth (m)				0.00-0.30	0.30-0.50
Date Sampled				21/05/2021	21/05/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	9.7
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	0.77
Boron (water soluble)	mg/kg	0.2	MCERTS	-	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	0.3
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	< 1.2
Chromium (III)	mg/kg	1	NONE	-	16
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	34
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	8.3
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	29
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	20
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	25
Magnesium (water soluble)	mg/kg	5	NONE	-	-
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-

Pesticide and Herbicide Screen

GCMS Pesticide Screen		N/A	NONE	None Detected	-

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-77003
Project / Site name: Ysgol Y Deri 2

Your Order No: PO07287

Lab Sample Number				1881972	1881973	1881974	1881975	1881976
Sample Reference				RH01	SA01	SA04	TP01	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.50	0.30-0.50	0.00-0.20	0.00-0.30	0.30-0.50
Date Sampled				21/05/2021	19/05/2021	19/05/2021	21/05/2021	19/05/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.0	7.9	7.1	7.9	7.8
Electrical Conductivity	µS/cm	10	ISO 17025	160	120	62	130	100
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 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	< 1.0
Sulphate as SO4	µg/l	100	ISO 17025	8100	3220	6190	5150	4170
Chloride	mg/l	0.15	ISO 17025	2.1	1.1	1.9	1.2	1.7
Fluoride	µg/l	50	ISO 17025	320	350	250	410	170
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	< 15	< 15	< 15	< 15
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	16	17	< 15	18	17
Ammoniacal Nitrogen as NH4	µg/l	15	NONE	17	18	16	19	18
Nitrate as N	mg/l	0.01	NONE	0.17	0.09	1.04	0.36	0.15
Nitrate as NO3	mg/l	0.05	NONE	0.76	0.42	4.62	1.58	0.68
Nitrite as N	µg/l	1	NONE	3.6	10	4.4	4.9	3.7
Nitrite as NO2	µg/l	5	NONE	12	34	14	16	12
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 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	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 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	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 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	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PAH Sums								
Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Sum of Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.002	NONE	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benz	µg/l	0.022	NONE	< 0.022	< 0.022	< 0.022	< 0.022	< 0.022
Total PAH								
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Analytical Report Number: 21-77003
Project / Site name: Ysgol Y Deri 2

Your Order No: PO07287

Lab Sample Number				1881972	1881973	1881974	1881975	1881976
Sample Reference				RH01	SA01	SA04	TP01	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.50	0.30-0.50	0.00-0.20	0.00-0.30	0.30-0.50
Date Sampled				21/05/2021	19/05/2021	19/05/2021	21/05/2021	19/05/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Aluminium (dissolved)	mg/l	0.012	ISO 17025	0.21	0.17	0.52	1.3	0.39
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Barium (dissolved)	µg/l	0.05	ISO 17025	11	9.8	8.9	20	10
Boron (dissolved)	µg/l	10	ISO 17025	36	21	56	32	40
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	1.5	1.1
Chromium (dissolved)	µg/l	0.4	ISO 17025	0.8	0.4	0.9	1.5	1.1
Cobalt (dissolved)	µg/l	0.3	ISO 17025	0.7	0.3	0.8	< 0.3	0.7
Copper (dissolved)	µg/l	0.7	ISO 17025	9.7	18	17	15	8.6
Iron (dissolved)	mg/l	0.004	ISO 17025	0.90	0.11	0.57	0.90	0.51
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	3.1	< 1.0	< 1.0	1.9
Manganese (dissolved)	µg/l	0.06	ISO 17025	600	480	510	420	440
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	3.3	2.9	7.0	7.7	2.8
Silver (dissolved)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Tin (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Zinc (dissolved)	µg/l	0.4	ISO 17025	10	7.7	7.3	11	9.0
Sodium (dissolved)	mg/l	0.01	ISO 17025	4.9	2.6	4.1	2.6	3.4

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 21-77003
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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1881955	RH01	None Supplied	0.30-0.50	Brown clay and loam with gravel and vegetation.
1881956	SA01	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1881957	SA01	None Supplied	0.30-0.50	Brown clay and loam with gravel.
1881958	SA02	None Supplied	0.00-0.30	Brown loam and clay with gravel and vegetation.
1881959	SA03	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1881960	SA04	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1881961	SA04	None Supplied	0.20-0.50	Brown clay and loam with gravel and vegetation.
1881962	TP01	None Supplied	0.00-0.30	Brown loam and clay with gravel and vegetation.
1881963	TP01	None Supplied	0.30-0.50	Brown clay and loam with gravel and vegetation.
1881964	TP02	None Supplied	0.30-0.60	Brown clay and loam with gravel.
1881965	TP03	None Supplied	0.30-0.50	Brown clay and loam with gravel and vegetation.
1881966	TP04	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1881967	TP04	None Supplied	0.20-0.50	Brown clay and sand with gravel.
1881968	TP05	None Supplied	0.00-0.20	Brown loam and clay with gravel.
1881969	TP05	None Supplied	0.30-0.50	Brown clay and sand with gravel.
1881970	TP06	None Supplied	0.00-0.30	Brown loam and clay with gravel.
1881971	TP07	None Supplied	0.30-0.50	Brown clay and sand with gravel.

Analytical Report Number : 21-77003
Project / Site name: Ysgol Y Deri 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
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
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
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
Electrical conductivity at 20oC of leachate	Determination of electrical conductivity in leachate by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031-PL	W	ISO 17025
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.	L009-PL	D	MCERTS
Fluoride in leachate	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
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 leachate - LOW LEVEL 1 ug/l	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 (skalar)	L080-PL	W	ISO 17025

Analytical Report Number : 21-77003
Project / Site name: Ysgol Y Deri 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 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
Nitrite, leachate soluble, in leachate	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L077-PL	W	NONE
Nitrate, leachate soluble, in leachate	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,	L078-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
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
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
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In house method.	L005-PL	W	ISO 17025
Sulphate in leachates	Determination of sulphate 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
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
Speciated EPA-16 PAHs in leachate (LOW LEVEL Dets)	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammonium as NH4 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
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

Analytical Report Number : 21-77003
Project / Site name: Ysgol Y Deri 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
Nitrite as N in leachate	Determination of nitrite in leachate by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L082-PL	W	NONE
Nitrate as N in leachate	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,	L078-PL	W	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
Cr (III) in leachate	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
GC Pesticide Screen (TIC)	Analysis of unknown pesticides by GCMS	GC Pesticide Screen (TIC)	L064B	D	NONE
Chloride in leachate	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Free cyanide in leachate	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	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide 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
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
Bromate in Leachate	Determination of bromate in leachate based on ion chromatography	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 leachate	Determination of PAH compounds in leachate 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
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.

Statistical Analysis

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

							Soil Type	Nat	Nat	Nat	Nat	Nat	Nat	Nat
	All values in mg/kg unless otherwise stated						Location & Depth	TP04	TP05	RH01	SA01	SA04	TP02	TP07
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**		**0.20-0.50**	**0.30-0.50**	**0.30-0.50**	**0.30-0.50**	**0.20-0.50**	**0.30-0.60**	**0.30-0.50**
Arsenic	1	7	8.2	14	0	79		10	11	14	8.2	9.1	9.6	9.7
Beryllium	0.06	7	0.66	2	0	92		1.2	1.7	2	0.68	0.97	0.66	0.77
Boron	0.2	7	0.7	3	0	21000		1.5	2.3	3	0.7	1.1	0.7	0.9
Cadmium	0.2	7	0.2	1.4	0	120		1.4	0.8	1.3	0.2	0.2	0.2	0.3
Chromium (III)	1	7	13	71	0	1500		29	37	71	15	20	13	16
Chromium (VI)	1.2	7	1.2	1.2	0	7.7		1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	7	18	51	0	12000		45	36	51	18	34	30	34
Lead	1	7	8.3	29	0	630		19	29	25	8.6	9.9	8.9	8.3
Mercury, inorganic	0.3	7	0.3	0.3	0	120		0.3	0.3	0.3	0.3	0.3	0.3	0.3
Nickel	1	7	23	86	0	290		42	43	86	23	31	27	29
Selenium	1	7	1	1	0	1400		1	1	1	1	1	1	1
Vanadium	1	7	13	55	0	2000		47	45	55	13	23	14	20
Zinc	1	7	17	450	0	81000		450	91	180	17	37	22	25
Cyanide (free)	1	7	1	1	0	1600		1	1	1	1	1	1	1
Phenol (total)	1	7	1	1	0	760		1	1	1	1	1	1	1
Acenaphthene	0.05	7	0.05	0.05	0	15000		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Acenaphthylene	0.05	7	0.05	0.05	0	15000		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Anthracene	0.05	7	0.05	0.05	0	74000		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benz(a)anthracene	0.05	7	0.05	0.05	0	17		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(a)pyrene	0.05	7	0.05	0.05	0	2.6		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(b)fluoranthene	0.05	7	0.05	0.05	0	18		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(ghi)perylene	0.05	7	0.05	0.05	0	120		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(k)fluoranthene	0.05	7	0.05	0.05	0	26		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Chrysene	0.05	7	0.05	0.05	0	25		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Dibenz(a,h)anthracene	0.05	7	0.05	0.05	0	2.3		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Fluoranthene	0.05	7	0.05	0.05	0	3100		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Fluorene	0.05	7	0.05	0.05	0	9900		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Indeno(1,2,3,cd)pyrene	0.05	7	0.05	0.05	0	11		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Naphthalene	0.05	7	0.05	0.05	0	3900		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Phenanthrene	0.05	7	0.05	0.05	0	3100		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Pyrene	0.05	7	0.05	0.05	0	7400		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Asbestos identified	Y/N							N	N	N	N	N	N	N
FOC (dimensionless)	0.006529	**(mean)**						0.015	0.0074	0.0081	0.0024	0.0039	0.0039	0.005
SOM (calculated)	1.13%	**(mean)**						2.59%	1.28%	1.40%	0.41%	0.67%	0.67%	0.86%
pH (su)	8.3	**(mean)**						8.5	8	8.2	8.3	8.2	8.4	8.6

Risk parameter: Human health - POS resi (1%SOM)
Data set: Natural
Client: AECOM
Site: Ysgol Y Deri
Job no.: C-17379-C
Lab. report no(s).: 21-77003-1

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) or +ve asbestos ID.
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

							Soil Type	Nat	Nat	Nat	Nat	Nat	Nat	Nat
	All values in mg/kg unless otherwise stated						Location & Depth	TP04	TP05	RH01	SA01	SA04	TP02	TP07
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**		**0.20-0.50**	**0.30-0.50**	**0.30-0.50**	**0.30-0.50**	**0.20-0.50**	**0.30-0.60**	**0.30-0.50**
Arsenic	1	7	8.2	14	0	37		10	11	14	8.2	9.1	9.6	9.7
Beryllium	0.06	7	0.66	2	0	73		1.2	1.7	2	0.68	0.97	0.66	0.77
Boron	0.2	7	0.7	3	0	300		1.5	2.3	3	0.7	1.1	0.7	0.9
Cadmium	0.2	7	0.2	1.4	0	14		1.4	0.8	1.3	0.2	0.2	0.2	0.3
Chromium (III)	1	7	13	71	0	890		29	37	71	15	20	13	16
Chromium (VI)	1.2	7	1.2	1.2	0	6.1		1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	7	18	51	0	2500		45	36	51	18	34	30	34
Lead	1	7	8.3	29	0	200		19	29	25	8.6	9.9	8.9	8.3
Mercury, inorganic	0.3	7	0.3	0.3	0	39		0.3	0.3	0.3	0.3	0.3	0.3	0.3
Nickel	1	7	23	86	0	130		42	43	86	23	31	27	29
Selenium	1	7	1	1	0	360		1	1	1	1	1	1	1
Vanadium	1	7	13	55	0	410		47	45	55	13	23	14	20
Zinc	1	7	17	450	0	3900		450	91	180	17	37	22	25
Cyanide (free)	1	7	1	1	0	790		1	1	1	1	1	1	1
Phenol (total)	1	7	1	1	0	290		1	1	1	1	1	1	1
Acenaphthene	0.05	7	0.05	0.05	0	220		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Acenaphthylene	0.05	7	0.05	0.05	0	180		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Anthracene	0.05	7	0.05	0.05	0	2400		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benz(a)anthracene	0.05	7	0.05	0.05	0	4.2		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(a)pyrene	0.05	7	0.05	0.05	0	1.5		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(b)fluoranthene	0.05	7	0.05	0.05	0	7.6		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(ghi)perylene	0.05	7	0.05	0.05	0	64		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(k)fluoranthene	0.05	7	0.05	0.05	0	12		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Chrysene	0.05	7	0.05	0.05	0	7.7		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Dibenz(a,h)anthracene	0.05	7	0.05	0.05	0	1.1		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Fluoranthene	0.05	7	0.05	0.05	0	290		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Fluorene	0.05	7	0.05	0.05	0	170		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Indeno(1,2,3,cd)pyrene	0.05	7	0.05	0.05	0	4.3		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Naphthalene	0.05	7	0.05	0.05	0	2.2		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Phenanthrene	0.05	7	0.05	0.05	0	97		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Pyrene	0.05	7	0.05	0.05	0	620		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Asbestos identified	Y/N							N	N	N	N	N	N	N
FOC (dimensionless)	0.006529	**(mean)**						0.015	0.0074	0.0081	0.0024	0.0039	0.0039	0.005
SOM (calculated)	1.13%	**(mean)**						2.59%	1.28%	1.40%	0.41%	0.67%	0.67%	0.86%
pH (su)	8.3	**(mean)**						8.5	8	8.2	8.3	8.2	8.4	8.6

Risk parameter: Human health - residential with plant uptake (1%SOM)
Data set: Natural
Client: AECOM
Site: Ysgol Y Deri
Job no.: C-17379-C
Lab. report no(s).: 21-77003-1

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) or +ve asbestos ID.
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

Hydrock

						Soil Type	Nat	Nat	Nat	Nat	Nat	Nat	Nat					
	All values in mg/kg unless otherwise stated					Location & Depth	TP04	TP05	RH01	SA01	SA04	TP02	TP07					
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.20-0.50**	**0.30-0.50**	**0.30-0.50**	**0.30-0.50**	**0.20-0.50**	**0.30-0.60**	**0.30-0.50**					
Arsenic	1	7	8.2	14	0	250	10	11	14	8.2	9.1	9.6	9.7					
Boron	0.2	7	0.7	3	1	3	1.5	2.3	3	0.7	1.1	0.7	0.9					
Chromium (III)	1	7	13	71	0	400	29	37	71	15	20	13	16					
Chromium (VI)	1.2	7	1.2	1.2	0	25	1.2	1.2	1.2	1.2	1.2	1.2	1.2					
Copper	1	7	18	51	0	135	45	36	51	18	34	30	34					
Nickel	1	7	23	86	1	75	42	43	86	23	31	27	29					
Zinc	1	7	17	450	1	300	450	91	180	17	37	22	25					
	Mean																	
pH (su)	8.3						8.5	8	8.2	8.3	8.2	8.4	8.6					

Risk parameter: Plant life pH 7
Data set: Natural
Client: AECOM
Site: Ysgol Y Deri
Job no.: C-17379-C
Lab. report no(s).: 21-77003-1

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	TS	TS	TS	TS	TS	TS
	All values in mg/kg unless otherwise stated						Location & Depth	SA02	SA03	SA04	TP01	TP04	TP05
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**		**0.00-0.30**	**0.00-0.20**	**0.00-0.20**	**0.00-0.30**	**0.00-0.20**	**0.00-0.20**
Arsenic	1	6	13	20	0	79		16	14	20	13	16	16
Beryllium	0.06	6	1.5	1.7	0	92		1.7	1.6	1.6	1.6	1.5	1.5
Boron	0.2	6	1.7	4.5	0	21000		2.6	1.7	4.5	2.8	3.5	3.5
Cadmium	0.2	6	0.8	1.2	0	120		0.9	1	1.1	0.8	1.2	1
Chromium (III)	1	6	30	48	0	1500		40	39	40	30	48	43
Chromium (VI)	1.2	6	1.2	1.2	0	7.7		1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	6	30	48	0	12000		38	34	48	39	37	30
Lead	1	6	42	67	0	630		51	66	67	42	53	64
Mercury, inorganic	0.3	6	0.3	0.3	0	120		0.3	0.3	0.3	0.3	0.3	0.3
Nickel	1	6	29	39	0	290		36	34	39	29	36	34
Selenium	1	6	1	1	0	1400		1	1	1	1	1	1
Vanadium	1	6	45	58	0	2000		49	51	55	45	58	55
Zinc	1	6	110	170	0	81000		110	150	140	130	170	110
Cyanide (free)	1	6	1	1	0	1600		1	1	1	1	1	1
Phenol (total)	1	6	1	1	0	3200		1	1	1	1	1	1
Acenaphthene	0.05	6	0.05	3.4	0	15000		0.05	0.05	0.05	3.4	0.05	1.8
Acenaphthylene	0.05	6	0.05	3.8	0	15000		0.05	0.58	0.05	3.8	0.05	0.05
Anthracene	0.05	6	0.05	13	0	74000		0.05	0.57	0.31	13	0.05	2.1
Benz(a)anthracene	0.05	6	0.05	25	1	18		0.05	2.2	1.4	25	0.05	2.1
Benzo(a)pyrene	0.05	6	0.05	18	1	2.6		0.05	2.1	0.93	18	0.05	1.5
Benzo(b)fluoranthene	0.05	6	0.05	28	1	18		0.05	3.7	1.5	28	0.05	2
Benzo(ghi)perylene	0.05	6	0.05	11	0	120		0.05	1.5	0.66	11	0.05	0.83
Benzo(k)fluoranthene	0.05	6	0.05	8.2	0	26		0.05	1	0.45	8.2	0.05	0.72
Chrysene	0.05	6	0.05	24	0	26		0.05	2.6	1.2	24	0.05	1.6
Dibenz(a,h)anthracene	0.05	6	0.05	3.5	1	2.32		0.05	0.42	0.25	3.5	0.05	0.25
Fluoranthene	0.05	6	0.05	53	0	3100		0.05	8.6	2.3	53	0.05	5.6
Fluorene	0.05	6	0.05	6.1	0	9900		0.05	0.76	0.05	6.1	0.05	2.1
Indeno(1,2,3,cd)pyrene	0.05	6	0.05	10	0	11		0.05	1.4	0.59	10	0.05	0.84
Naphthalene	0.05	6	0.05	1.8	0	4200		0.05	0.99	0.05	1.8	0.05	0.97
Phenanthrene	0.05	6	0.05	48	0	3100		0.05	10	0.74	48	0.05	8.5
Pyrene	0.05	6	0.05	41	0	7400		0.05	6.1	1.9	41	0.05	4.2
Asbestos identified	Y/N							N	N	N	N	N	N
FOC (dimensionless)	0.034	**(mean)**						0.023	0.034	0.038	0.039	0.032	0.038
SOM (calculated)	5.86%	**(mean)**						3.97%	5.86%	6.55%	6.72%	5.52%	6.55%
pH (su)	6.9	**(mean)**						6.9	7	6.6	7.9	6.5	6.6

Risk parameter: Human health - POS resi (6%SOM)
Data set: Topsoil
Client: AECOM
Site: Ysgol Y Deri
Job no.: C-17379-C
Lab. report no(s).: 21-77003-1

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) or +ve asbestos ID.
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

							Soil Type	TS	TS	TS	TS	TS	TS
	All values in mg/kg unless otherwise stated						Location & Depth	SA02	SA03	SA04	TP01	TP04	TP05
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**		**0.00-0.30**	**0.00-0.20**	**0.00-0.20**	**0.00-0.30**	**0.00-0.20**	**0.00-0.20**
Arsenic	1	6	13	20	0	40		16	14	20	13	16	16
Beryllium	0.06	6	1.5	1.7	0	73		1.7	1.6	1.6	1.6	1.5	1.5
Boron	0.2	6	1.7	4.5	0	11000		2.6	1.7	4.5	2.8	3.5	3.5
Cadmium	0.2	6	0.8	1.2	0	87		0.9	1	1.1	0.8	1.2	1
Chromium (III)	1	6	30	48	0	890		40	39	40	30	48	43
Chromium (VI)	1.2	6	1.2	1.2	0	6.1		1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	6	30	48	0	7300		38	34	48	39	37	30
Lead	1	6	42	67	0	310		51	66	67	42	53	64
Mercury, inorganic	0.3	6	0.3	0.3	0	56		0.3	0.3	0.3	0.3	0.3	0.3
Nickel	1	6	29	39	0	180		36	34	39	29	36	34
Selenium	1	6	1	1	0	600		1	1	1	1	1	1
Vanadium	1	6	45	58	0	1200		49	51	55	45	58	55
Zinc	1	6	110	170	0	40000		110	150	140	130	170	110
Cyanide (free)	1	6	1	1	0	800		1	1	1	1	1	1
Phenol (total)	1	6	1	1	0	2300		1	1	1	1	1	1
Acenaphthene	0.05	6	0.05	3.4	0	6000		0.05	0.05	0.05	3.4	0.05	1.8
Acenaphthylene	0.05	6	0.05	3.8	0	6000		0.05	0.58	0.05	3.8	0.05	0.05
Anthracene	0.05	6	0.05	13	0	37000		0.05	0.57	0.31	13	0.05	2.1
Benz(a)anthracene	0.05	6	0.05	25	1	9.4		0.05	2.2	1.4	25	0.05	2.1
Benzo(a)pyrene	0.05	6	0.05	18	2	1.6		0.05	2.1	0.93	18	0.05	1.5
Benzo(b)fluoranthene	0.05	6	0.05	28	1	11		0.05	3.7	1.5	28	0.05	2
Benzo(ghi)perylene	0.05	6	0.05	11	0	72		0.05	1.5	0.66	11	0.05	0.83
Benzo(k)fluoranthene	0.05	6	0.05	8.2	0	16		0.05	1	0.45	8.2	0.05	0.72
Chrysene	0.05	6	0.05	24	1	15		0.05	2.6	1.2	24	0.05	1.6
Dibenz(a,h)anthracene	0.05	6	0.05	3.5	1	1.4		0.05	0.42	0.25	3.5	0.05	0.25
Fluoranthene	0.05	6	0.05	53	0	1600		0.05	8.6	2.3	53	0.05	5.6
Fluorene	0.05	6	0.05	6.1	0	4500		0.05	0.76	0.05	6.1	0.05	2.1
Indeno(1,2,3,cd)pyrene	0.05	6	0.05	10	1	6.7		0.05	1.4	0.59	10	0.05	0.84
Naphthalene	0.05	6	0.05	1.8	0	13		0.05	0.99	0.05	1.8	0.05	0.97
Phenanthrene	0.05	6	0.05	48	0	1500		0.05	10	0.74	48	0.05	8.5
Pyrene	0.05	6	0.05	41	0	3800		0.05	6.1	1.9	41	0.05	4.2
Asbestos identified	Y/N							N	N	N	N	N	N
FOC (dimensionless)	0.034	**(mean)**						0.023	0.034	0.038	0.039	0.032	0.038
SOM (calculated)	5.86%	**(mean)**						3.97%	5.86%	6.55%	6.72%	5.52%	6.55%
pH (su)	6.9	**(mean)**						6.9	7	6.6	7.9	6.5	6.6

Risk parameter: Human health - residential without plant uptake (6%SOM)
Data set: Topsoil
Client: AECOM
Site: Ysgol Y Deri
Job no.: C-17379-C
Lab. report no(s).: 21-77003-1

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) or +ve asbestos ID.
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

Hydrock

						Soil Type	TS	TS	TS	TS	TS	TS							
	All values in mg/kg unless otherwise stated					Location & Depth	SA02	SA03	SA04	TP01	TP04	TP05							
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.00-0.30**	**0.00-0.20**	**0.00-0.20**	**0.00-0.30**	**0.00-0.20**	**0.00-0.20**							
Arsenic	1	6	13	20	0	250	16	14	20	13	16	16							
Boron	0.2	6	1.7	4.5	3	3	2.6	1.7	4.5	2.8	3.5	3.5							
Chromium (III)	1	6	30	48	0	400	40	39	40	30	48	43							
Chromium (VI)	1.2	6	1.2	1.2	0	25	1.2	1.2	1.2	1.2	1.2	1.2							
Copper	1	6	30	48	0	135	38	34	48	39	37	30							
Nickel	1	6	29	39	0	75	36	34	39	29	36	34							
Zinc	1	6	110	170	0	300	110	150	140	130	170	110							
	Mean																		
pH (su)	6.9						6.9	7	6.6	7.9	6.5	6.6							

Risk parameter: Plant life pH 7
Data set: Topsoil
Client: AECOM
Site: Ysgol Y Deri
Job no.: C-17379-C
Lab. report no(s).: 21-77003-1

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

Summary of Remedial Targets Methodology Screening

Hydrock

Hydrock Scenario: Scenario D - DWS & EQS (inland)
RTM Level: RTM Level 1 - Soil Zone Assessment - leachate samples
Water body receptor(s): Groundwater and surface water
Secondary receptor(s): Human health (abstraction)
Data set: Leachate
Client: AECOM
Site: Ysgol Y Deri

Job no: C-17379-C
Test Certificates(s): 21-77003
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		Notes
				No. of Samples	No. of Samples > LoD	Limit of Detection	Minimum Value	Maximum Value	95-%ile Value		DWS	Inland Waters EQS	DWS	Inland Waters EQS	DWS	Inland Waters EQS	EQS compared to dissolved metals as an initial screen, with no adjustment for bioavailability or ABC.
P1133	Hardness as mg/l $CaCO_3$			-	-	-	10	-	-	-	-	-					Representative hardness of receiving surface water environment used in some inland EQS
7440-22-4	Silver (Ag) (dissolved)			0							n/a	0.05					
7429-90-5	Aluminium (Al) (dissolved)			5	5	12	170	1300	1144	1300	200	n/a	4		4		
7440-38-2	Arsenic (As) (dissolved)	SP	**H**	5	0	1	<1	<1	<1	<1	10	50	0	0	0	0	
7440-42-8	Boron (B) (dissolved)		NP	5	5	10	21	56	52.8	56	1000	2000	0	0	0	0	
7440-39-3	Barium (Ba) (dissolved)			5	5	0.05	8.9	20	18.2	20	1300	n/a	0		0		
7440-43-9	Cadmium (Cd) (dissolved)	**PH**	NP	5	0	0.08	<0.08	<0.08	<0.08	<0.08	5	0.08	0	0	0	0	EQS (inland) dependent on hardness of receiving surface water environment
7440-48-4	Cobalt (Co) (dissolved)		NP	5	3	0.3	<0.3	0.8	0.78	0.8	n/a	3		0		0	
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	**H**	5	0	5	<5	<5	<5	<5	n/a	3.4		5		0	
16065-83-1	Chromium (III) (Cr) (dissolved)	SP		5	2	1	<1	1.5	1.42	1.5	n/a	4.7		0		0	
7440-47-3	Chromium (Cr) (total) (dissolved)			5	4	0.4	<0.4	1.5	1.42	1.5	50	n/a	0		0		
7440-50-8	Copper (Cu) (dissolved)	SP	NP	5	5	0.7	8.6	18	17.8	18	2000	1	0	5	0	5	Bioavailable EQS (inland)
7439-89-6	Iron (Fe) (dissolved)	SP		5	5	4	110	900	900	900	200	1000	4	0	4	0	
7439-97-6	Mercury (Hg) (dissolved)	**PH**	**H**	5	0	0.5	<0.5	<0.5	<0.5	<0.5	1	0.07	0	5	0	0	
P1286	Manganese (Mn) (dissolved)	SP		5	5	0.06	420	600	582	600	50	123	5	5	5	5	Bioavailable EQS (inland)
7440-23-5	Sodium (Na) (dissolved)			5	5	10	2600	4900	4740	4900	200000	n/a	0		0		
7440-02-0	Nickel (Ni) (dissolved)	***P***	NP	5	5	0.3	2.8	7.7	7.56	7.7	20	4	0	2	0	2	Bioavailable EQS (inland)
7439-92-1	Lead (Pb) (dissolved)	***P***	**H**	5	2	1	<1	3.1	2.86	3.1	10	1.2	0	2	0	2	Bioavailable EQS (inland)
7440-36-0	Antimony (Sb) (dissolved)		NP	5	0	1.7	<1.7	<1.7	<1.7	<1.7	5	n/a	0		0		
7782-49-2	Selenium (Se) (dissolved)		NP	5	0	4	<4	<4	<4	<4	10	n/a	0		0		
7440-31-5	Tin (Sn) (dissolved)			5	0	1	<1	<1	<1	<1	n/a	25		0		0	
7440-62-2	Vanadium (V) (dissolved)			5	0	1.7	<1.7	<1.7	<1.7	<1.7	n/a	20		0		0	EQS (inland) dependent on hardness of receiving surface water environment
7440-66-6	Zinc (Zn) (dissolved)	SP	NP	5	5	0.4	7.3	11	10.8	11	n/a	13.7		0		0	Bioavailable EQS (inland) + ambient background concentration (ABC)
P1095	Cyanide (free) (hydrogen cyanide)	SP	NP	5	0	1	<1	<1	<1	<1	n/a	1		0		0	
57-12-5	Cyanide (total)			5	0	1	<1	<1	<1	<1	50	n/a	0		0		
P1140	Ammonium (NH_4^+)		NP	5	5	15	16	19	18.8	19	500	n/a	0		0		
P1238	Ammnoniacal Nitrogen (as N)		NP	5	0	15	<15	<15	<15	<15	n/a	300		0		0	
P1720	Ammonia (unionised) (NH_3 as N) (free ammonia)	SP	NP	5	4	15	<15	18	17.8	18	n/a	n/a					
15541-45-4	Bromate (BrO_3)			5	0	2	<2	<2	<2	<2	10	n/a	0		0		
16887-00-6	Chloride (Cl^-)			5	3	150	110	210	206	210	250000	250000	0	0	0	0	
16984-48-8	Fluoride (F^-)			5	5	50	170	410	398	410	1500	1000	0	0	0	0	EQS (inland) dependent on hardness of receiving surface water environment
P1348	Nitrate (NO_3^-)			5	5	50	420	4620	4012	4620	50000	n/a	0		0		
P1349	Nitrite (NO_2^-)			5	5	5	12	34	30.4	34	500	n/a	0		0		
14808-79-8	Sulfate (SO_4^{2-})			5	5	100	3220	8100	7718	8100	250000	400000	0	0	0	0	
P1134	pH (min.) (su)			5	5	0	7.1	8	7.98	8	6.5	6	0	0	0	0	
P1134	pH (max.) (su)			5	5	0	7.1	8	7.98	8	9.5	9	0	0	0	0	
P1287	Electrical conductivity (µS/cm)			5	5	10	62	160	154	160	2500	n/a	0		0		

Appendix G

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.

V3CQ2-J97GU-YP6SW

Job name

21-77003_HWOL_Results

Description/Comments

Lab cert: 21-77003

Project

17379

Site

Ysgol Y Deri

Classified by

Name:
Matthew Keehn
Company:
Hydrock Consultants Ltd
Date:
09 Jun 2021 16:23 GMT
Telephone:

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	RH01--21052021-0.30		Non Hazardous		2
2	SA01--19052021-0.30		Non Hazardous		4
3	SA02--19052021-0.00		Non Hazardous		6
4	SA03--19052021-0.00		Non Hazardous		8
5	SA04--19052021-0.00		Non Hazardous		10
6	SA04--19052021-0.20		Non Hazardous		12
7	TP01--21052021-0.00		Non Hazardous		14
8	TP02--21052021-0.30		Non Hazardous		16
9	TP04--19052021-0.00		Non Hazardous		18
10	TP04--19052021-0.20		Non Hazardous		20
11	TP05--19052021-0.00		Non Hazardous		22
12	TP05--19052021-0.30		Non Hazardous		24
13	TP07--21052021-0.30		Non Hazardous		26

Related documents

#	Name	Description
1	21-77003_HWOL_Results.hwol	.hwol file used to create the Job
2	Hydrock Standard plus Cresol (ammended Lead)	waste stream template used to create this Job

Report

Created by: Matthew Keehn
Created date: 09 Jun 2021 16:23 GMT

Classification of sample: RH01--21052021-0.30

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

Sample details

Sample name:
RH01--21052021-0.30
Moisture content:
22%
(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: 22% 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	14.418	mg/kg	0.00144 %	✓	
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		2	mg/kg	2.775	4.33	mg/kg	0.000433 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		3	mg/kg	13.43	31.426	mg/kg	0.00314 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1.3	mg/kg	1.285	1.303	mg/kg	0.000101 %	✓	
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		71	mg/kg	1.462	80.941	mg/kg	0.00809 %	✓	
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		51	mg/kg	1.126	44.788	mg/kg	0.00448 %	✓	

#		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	25	mg/kg		19.5	mg/kg	0.00195 %	✓	
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]		86	mg/kg	1.579	105.953	mg/kg	0.0106 %	✓	
26		pH			PH		8.2	pH		8.2	pH	8.2 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		180	mg/kg	1.245	174.758	mg/kg	0.0175 %	✓	
31		monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
32		magnesium { magnesium phosphide; trimagnesium diphosphide }	015-005-00-3	235-023-7	12057-74-8		28	mg/kg	1.85	40.394	mg/kg	0.00404 %	✓	
33		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		55	mg/kg	1.785	76.584	mg/kg	0.00766 %	✓	
											Total:	0.0602 %		

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: SA01--19052021-0.30

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

Sample details

Sample name:
SA01--19052021-0.30
Moisture content:
12%
(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: 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		8.2 mg/kg	1.32	9.527 mg/kg	0.000953 %	✓	
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		0.68 mg/kg	2.775	1.661 mg/kg	0.000166 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) } 10294-33-4, 10294-34-5, 7637-07-2		0.7 mg/kg	13.43	8.273 mg/kg	0.000827 %	✓	
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		15 mg/kg	1.462	19.293 mg/kg	0.00193 %	✓	
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		18 mg/kg	1.126	17.834 mg/kg	0.00178 %	✓	

#		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	8.6	mg/kg		7.568	mg/kg	0.000757 %	✓	
		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 }				23	mg/kg	1.579	31.969	mg/kg	0.0032 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				8.3	pH		8.3	pH	8.3 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 }				17	mg/kg	1.245	18.621	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 }				13	mg/kg	1.785	20.423	mg/kg	0.00204 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0143 %		

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: SA02--19052021-0.00

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

Sample details

Sample name:
SA02--19052021-0.00
Moisture content:
27%
(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: 27% 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		16 mg/kg	1.32	15.421 mg/kg	0.00154 %	✓	
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		1.7 mg/kg	2.775	3.444 mg/kg	0.000344 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) } 10294-33-4, 10294-34-5, 7637-07-2		2.6 mg/kg	13.43	25.49 mg/kg	0.00255 %	✓	
12		cadmium { cadmium sulfide } 048-010-00-4 / 215-147-8 / 1306-23-6	1	0.9 mg/kg	1.285	0.844 mg/kg	0.0000657 %	✓	
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) } 215-160-9 / 1308-38-9		40 mg/kg	1.462	42.677 mg/kg	0.00427 %	✓	
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		38 mg/kg	1.126	31.232 mg/kg	0.00312 %	✓	

#		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	51	mg/kg		37.23	mg/kg	0.00372 %	✓	
		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 }				36	mg/kg	1.579	41.509	mg/kg	0.00415 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				6.9	pH		6.9	pH	6.9 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 }				110	mg/kg	1.245	99.951	mg/kg	0.01 %	✓	
		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 }				49	mg/kg	1.785	63.856	mg/kg	0.00639 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0369 %		

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: SA03--19052021-0.00

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

Sample details

Sample name:
SA03--19052021-0.00
Moisture content:
30%
(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: 30% 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		0.58 mg/kg		0.406 mg/kg	0.0000406 %	✓	
3	anthracene		204-371-1	120-12-7		0.57 mg/kg		0.399 mg/kg	0.0000399 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	12.939 mg/kg	0.00129 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.2 mg/kg		1.54 mg/kg	0.000154 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		2.1 mg/kg		1.47 mg/kg	0.000147 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		3.7 mg/kg		2.59 mg/kg	0.000259 %	✓	
8	benzo[ghi]perylene		205-883-8	191-24-2		1.5 mg/kg		1.05 mg/kg	0.000105 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1 mg/kg		0.7 mg/kg	0.00007 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.6 mg/kg	2.775	3.108 mg/kg	0.000311 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.7 mg/kg	13.43	15.982 mg/kg	0.0016 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1 mg/kg	1.285	0.9 mg/kg	0.00007 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		39 mg/kg	1.462	39.9 mg/kg	0.00399 %	✓	
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		2.6 mg/kg		1.82 mg/kg	0.000182 %	✓	
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		34 mg/kg	1.126	26.796 mg/kg	0.00268 %	✓	

#		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				0.42	mg/kg		0.294	mg/kg	0.0000294 %	✓	
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				8.6	mg/kg		6.02	mg/kg	0.000602 %	✓	
			205-912-4	206-44-0									
20		fluorene				0.76	mg/kg		0.532	mg/kg	0.0000532 %	✓	
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				1.4	mg/kg		0.98	mg/kg	0.000098 %	✓	
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	66	mg/kg		46.2	mg/kg	0.00462 %	✓	
		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				0.99	mg/kg		0.693	mg/kg	0.0000693 %	✓	
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel dihydroxide }				34	mg/kg	1.579	37.592	mg/kg	0.00376 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				7	pH		7	pH	7pH		
				PH									
27		phenanthrene				10	mg/kg		7	mg/kg	0.0007 %	✓	
			201-581-5	85-01-8									
28		pyrene				6.1	mg/kg		4.27	mg/kg	0.000427 %	✓	
			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 }				150	mg/kg	1.245	130.695	mg/kg	0.0131 %	✓	
		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 }				51	mg/kg	1.785	63.731	mg/kg	0.00637 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0414 %		

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: SA04--19052021-0.00

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

Sample details

Sample name:
SA04--19052021-0.00
Moisture content:
31%
(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: 31% 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		0.31 mg/kg		0.214 mg/kg	0.0000214 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		20 mg/kg	1.32	18.22 mg/kg	0.00182 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.4 mg/kg		0.966 mg/kg	0.0000966 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.93 mg/kg		0.642 mg/kg	0.0000642 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.5 mg/kg		1.035 mg/kg	0.000104 %	✓	
8	benzo[ghi]perylene		205-883-8	191-24-2		0.66 mg/kg		0.455 mg/kg	0.0000455 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.45 mg/kg		0.311 mg/kg	0.0000311 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.6 mg/kg	2.775	3.064 mg/kg	0.000306 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		4.5 mg/kg	13.43	41.7 mg/kg	0.00417 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1.1 mg/kg	1.285	0.976 mg/kg	0.0000759 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		40 mg/kg	1.462	40.339 mg/kg	0.00403 %	✓	
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		1.2 mg/kg		0.828 mg/kg	0.0000828 %	✓	
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		48 mg/kg	1.126	37.289 mg/kg	0.00373 %	✓	

#		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				0.25	mg/kg		0.173	mg/kg	0.0000173 %	✓	
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				2.3	mg/kg		1.587	mg/kg	0.000159 %	✓	
			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				0.59	mg/kg		0.407	mg/kg	0.0000407 %	✓	
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	67	mg/kg		46.23	mg/kg	0.00462 %	✓	
		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 }				39	mg/kg	1.579	42.504	mg/kg	0.00425 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				6.6	pH		6.6	pH	6.6 pH		
				PH									
27		phenanthrene				0.74	mg/kg		0.511	mg/kg	0.0000511 %	✓	
			201-581-5	85-01-8									
28		pyrene				1.9	mg/kg		1.311	mg/kg	0.000131 %	✓	
			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 }				140	mg/kg	1.245	120.239	mg/kg	0.012 %	✓	
		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 }				55	mg/kg	1.785	67.748	mg/kg	0.00677 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0434 %		

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: SA04--19052021-0.20

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

Sample details

Sample name:
SA04--19052021-0.20
Moisture content:
16%
(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: 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		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		9.1 mg/kg	1.32	10.093 mg/kg	0.00101 %	✓	
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		0.97 mg/kg	2.775	2.261 mg/kg	0.000226 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) } 10294-33-4, 10294-34-5, 7637-07-2		1.1 mg/kg	13.43	12.409 mg/kg	0.00124 %	✓	
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		20 mg/kg	1.462	24.554 mg/kg	0.00246 %	✓	
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		34 mg/kg	1.126	32.155 mg/kg	0.00322 %	✓	

#		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	9.9	mg/kg		8.316	mg/kg	0.000832 %	✓	
		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 }				31	mg/kg	1.579	41.13	mg/kg	0.00411 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				8.2	pH		8.2	pH	8.2 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 }				37	mg/kg	1.245	38.686	mg/kg	0.00387 %	✓	
		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 }				23	mg/kg	1.785	34.49	mg/kg	0.00345 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0212 %		

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: TP01--21052021-0.00

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

Sample details

Sample name:
TP01--21052021-0.00
Moisture content:
22%
(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: 22% 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		3.4	mg/kg		2.652	mg/kg	0.000265 %	✓	
2		acenaphthylene		205-917-1	208-96-8		3.8	mg/kg		2.964	mg/kg	0.000296 %	✓	
3		anthracene		204-371-1	120-12-7		13	mg/kg		10.14	mg/kg	0.00101 %	✓	
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	13.388	mg/kg	0.00134 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		25	mg/kg		19.5	mg/kg	0.00195 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		18	mg/kg		14.04	mg/kg	0.0014 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		28	mg/kg		21.84	mg/kg	0.00218 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		11	mg/kg		8.58	mg/kg	0.000858 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		8.2	mg/kg		6.396	mg/kg	0.00064 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.6	mg/kg	2.775	3.464	mg/kg	0.000346 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2.8	mg/kg	13.43	29.331	mg/kg	0.00293 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.8	mg/kg	1.285	0.802	mg/kg	0.0000624 %	✓	
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		30	mg/kg	1.462	34.2	mg/kg	0.00342 %	✓	
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		24	mg/kg		18.72	mg/kg	0.00187 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		39	mg/kg	1.126	34.25	mg/kg	0.00342 %	✓	

#		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				3.5	mg/kg		2.73	mg/kg	0.000273 %	✓	
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				53	mg/kg		41.34	mg/kg	0.00413 %	✓	
			205-912-4	206-44-0									
20		fluorene				6.1	mg/kg		4.758	mg/kg	0.000476 %	✓	
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				10	mg/kg		7.8	mg/kg	0.00078 %	✓	
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	42	mg/kg		32.76	mg/kg	0.00328 %	✓	
		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				1.8	mg/kg		1.404	mg/kg	0.00014 %	✓	
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel dihydroxide }				29	mg/kg	1.579	35.728	mg/kg	0.00357 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
27		phenanthrene				48	mg/kg		37.44	mg/kg	0.00374 %	✓	
			201-581-5	85-01-8									
28		pyrene				41	mg/kg		31.98	mg/kg	0.0032 %	✓	
			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 }				130	mg/kg	1.245	126.214	mg/kg	0.0126 %	✓	
		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 }				45	mg/kg	1.785	62.66	mg/kg	0.00627 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0612 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP02--21052021-0.30

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

Sample details

Sample name:
TP02--21052021-0.30
Moisture content:
15%
(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: 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		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		9.6 mg/kg	1.32	10.774 mg/kg	0.00108 %	✓	
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		0.66 mg/kg	2.775	1.557 mg/kg	0.000156 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) } 10294-33-4, 10294-34-5, 7637-07-2		0.7 mg/kg	13.43	7.991 mg/kg	0.000799 %	✓	
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		13 mg/kg	1.462	16.15 mg/kg	0.00162 %	✓	
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		30 mg/kg	1.126	28.71 mg/kg	0.00287 %	✓	

#		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	8.9	mg/kg		7.565	mg/kg	0.000757 %	✓	
		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 }				27	mg/kg	1.579	36.25	mg/kg	0.00362 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				8.4	pH		8.4	pH	8.4 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 }				22	mg/kg	1.245	23.276	mg/kg	0.00233 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31		monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
				P1186									
32		magnesium { magnesium phosphide; trimagnesium diphosphide }				5.5	mg/kg	1.85	8.647	mg/kg	0.000865 %	✓	
		015-005-00-3	235-023-7	12057-74-8									
33		vanadium { divanadium pentaoxide; vanadium pentoxide }				14	mg/kg	1.785	21.244	mg/kg	0.00212 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.017 %		

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: TP04--19052021-0.00

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

Sample details

Sample name:
TP04--19052021-0.00
Moisture content:
32%
(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: 32% 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		16 mg/kg	1.32	14.365 mg/kg	0.00144 %	✓	
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		1.5 mg/kg	2.775	2.831 mg/kg	0.000283 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) } 10294-33-4, 10294-34-5, 7637-07-2		3.5 mg/kg	13.43	31.963 mg/kg	0.0032 %	✓	
12		cadmium { cadmium sulfide } 048-010-00-4 / 215-147-8 / 1306-23-6	1	1.2 mg/kg	1.285	1.049 mg/kg	0.0000816 %	✓	
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) } 215-160-9 / 1308-38-9		48 mg/kg	1.462	47.705 mg/kg	0.00477 %	✓	
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		37 mg/kg	1.126	28.327 mg/kg	0.00283 %	✓	

#		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	53	mg/kg		36.04	mg/kg	0.0036 %	✓	
		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 }				36	mg/kg	1.579	38.666	mg/kg	0.00387 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				6.5	pH		6.5	pH	6.5 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 }				170	mg/kg	1.245	143.889	mg/kg	0.0144 %	✓	
		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 }				58	mg/kg	1.785	70.408	mg/kg	0.00704 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0423 %		

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: TP04--19052021-0.20

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

Sample details

Sample name:
TP04--19052021-0.20
Moisture content:
18%
(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: 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		10 mg/kg	1.32	10.827 mg/kg	0.00108 %	✓	
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		1.2 mg/kg	2.775	2.731 mg/kg	0.000273 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) } 10294-33-4, 10294-34-5, 7637-07-2		1.5 mg/kg	13.43	16.519 mg/kg	0.00165 %	✓	
12		cadmium { cadmium sulfide } 048-010-00-4 / 215-147-8 / 1306-23-6	1	1.4 mg/kg	1.285	1.475 mg/kg	0.000115 %	✓	
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) } 215-160-9 / 1308-38-9		29 mg/kg	1.462	34.756 mg/kg	0.00348 %	✓	
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		45 mg/kg	1.126	41.545 mg/kg	0.00415 %	✓	

#		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	19	mg/kg		15.58	mg/kg	0.00156 %	✓	
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]		42	mg/kg	1.579	54.398	mg/kg	0.00544 %	✓	
26		pH			PH		8.5	pH		8.5	pH	8.5 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		450	mg/kg	1.245	459.299	mg/kg	0.0459 %	✓	
31		monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
32		magnesium { magnesium phosphide; trimagnesium diphosphide }	015-005-00-3	235-023-7	12057-74-8		10	mg/kg	1.85	15.166	mg/kg	0.00152 %	✓	
33		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		47	mg/kg	1.785	68.801	mg/kg	0.00688 %	✓	
											Total:	0.0729 %		

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: TP05--19052021-0.00

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

Sample details

Sample name:
TP05--19052021-0.00
Moisture content:
34%
(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: 34% 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		1.8	mg/kg		1.188	mg/kg	0.000119 %	✓	
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		2.1	mg/kg		1.386	mg/kg	0.000139 %	✓	
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16	mg/kg	1.32	13.943	mg/kg	0.00139 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.1	mg/kg		1.386	mg/kg	0.000139 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.5	mg/kg		0.99	mg/kg	0.000099 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2	mg/kg		1.32	mg/kg	0.000132 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		0.83	mg/kg		0.548	mg/kg	0.0000548 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.72	mg/kg		0.475	mg/kg	0.0000475 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.5	mg/kg	2.775	2.748	mg/kg	0.000275 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		3.5	mg/kg	13.43	31.023	mg/kg	0.0031 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1	mg/kg	1.285	0.848	mg/kg	0.000066 %	✓	
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		43	mg/kg	1.462	41.479	mg/kg	0.00415 %	✓	
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		1.6	mg/kg		1.056	mg/kg	0.000106 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		30	mg/kg	1.126	22.293	mg/kg	0.00223 %	✓	

#		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				0.25	mg/kg		0.165	mg/kg	0.0000165 %	✓	
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				5.6	mg/kg		3.696	mg/kg	0.00037 %	✓	
			205-912-4	206-44-0									
20		fluorene				2.1	mg/kg		1.386	mg/kg	0.000139 %	✓	
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				0.84	mg/kg		0.554	mg/kg	0.0000554 %	✓	
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	64	mg/kg		42.24	mg/kg	0.00422 %	✓	
		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				0.97	mg/kg		0.64	mg/kg	0.000064 %	✓	
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel dihydroxide }				34	mg/kg	1.579	35.444	mg/kg	0.00354 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				6.6	pH		6.6	pH	6.6 pH		
				PH									
27		phenanthrene				8.5	mg/kg		5.61	mg/kg	0.000561 %	✓	
			201-581-5	85-01-8									
28		pyrene				4.2	mg/kg		2.772	mg/kg	0.000277 %	✓	
			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 }				110	mg/kg	1.245	90.366	mg/kg	0.00904 %	✓	
		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 }				55	mg/kg	1.785	64.802	mg/kg	0.00648 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0375 %		

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: TP05--19052021-0.30

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

Sample details

Sample name:
TP05--19052021-0.30
Moisture content:
18%
(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: 18% 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	11.909 mg/kg	0.00119 %	✓	
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		1.7 mg/kg	2.775	3.869 mg/kg	0.000387 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2.3 mg/kg	13.43	25.329 mg/kg	0.00253 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.8 mg/kg	1.285	0.843 mg/kg	0.0000656 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		37 mg/kg	1.462	44.344 mg/kg	0.00443 %	✓	
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		36 mg/kg	1.126	33.236 mg/kg	0.00332 %	✓	

#		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	29	mg/kg		23.78	mg/kg	0.00238 %	✓	
		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 }				43	mg/kg	1.579	55.693	mg/kg	0.00557 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				8	pH		8	pH	8pH		
				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 }				91	mg/kg	1.245	92.881	mg/kg	0.00929 %	✓	
		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 }				45	mg/kg	1.785	65.873	mg/kg	0.00659 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0365 %		

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: TP07--21052021-0.30

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

Sample details

Sample name:
TP07--21052021-0.30
Moisture content:
14%
(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: 14% 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		9.7 mg/kg	1.32	11.014 mg/kg	0.0011 %	✓	
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		0.77 mg/kg	2.775	1.838 mg/kg	0.000184 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) } – / – / 10294-33-4, 10294-34-5, 7637-07-2		0.9 mg/kg	13.43	10.395 mg/kg	0.00104 %	✓	
12		cadmium { cadmium sulfide } 048-010-00-4 / 215-147-8 / 1306-23-6	1	0.3 mg/kg	1.285	0.332 mg/kg	0.0000258 %	✓	
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) } – / 215-160-9 / 1308-38-9		16 mg/kg	1.462	20.111 mg/kg	0.00201 %	✓	
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		34 mg/kg	1.126	32.921 mg/kg	0.00329 %	✓	

#		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	8.3	mg/kg		7.138	mg/kg	0.000714 %	✓	
		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 }				29	mg/kg	1.579	39.393	mg/kg	0.00394 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				8.6	pH		8.6	pH	8.6 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 }				25	mg/kg	1.245	26.761	mg/kg	0.00268 %	✓	
		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 }				20	mg/kg	1.785	30.705	mg/kg	0.00307 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0188 %		

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

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

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

magnesium {magnesium phosphide; trimagnesium diphosphide}

Worst case species based on hazard statements.

vanadium {divanadium pentaoxide; vanadium pentoxide}

Worst case species based on hazard statements.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2021.155.4797.9144 (05 Jun 2021)
HazWasteOnline Database: 2021.155.4797.9144 (05 Jun 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

Appendix H

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 H.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 H.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).	Made Ground not expected on site.		✓
Soft / loose compressible ground (low strength and high settlement potential).	Site underlain by weathered bedrock.	✓	
Shrink swell of the clay fraction of soils under the influence of vegetation.	Mudstone likely to have weathered to clay.	✓	
Variable lateral and vertical changes in ground conditions.	Bedrock consists of interbedded mudstone and limestone.	✓	
High sulfates present in the soils.	Marine mudstones can have high sulphate contents.	✓	
Adverse chemical ground conditions, (e.g. expansive slag).	No previous non-agricultural site use noted.		✓
Obstructions.			✓
Existing below ground structures to remain			✓
Shallow groundwater.	Shallow groundwater expected. Possible seasonal variation in groundwater levels	✓	
Changing groundwater conditions.		✓	
Risk from erosion.	Flooding not expected at the site.		✓
Risk from flooding.			✓
Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of side walls.	Superficial deposits and Made Ground not expected to be present.		✓
Slope stability issues – general slopes.	Possibility for minor slopes due to general fall in elevation across the site	✓	
Slope stability issues – retaining walls.		✓	
Earthworks – settlement (due to placement of fill on soft / loose ground).			✓
Earthworks – poor bearing capacity of new fill.			✓

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 – unsuitability of site won material to be reused as fill.	Possibility for site won material to be of high plasticity.	✓	

Geotechnical Hazard Identification – Following Ground Investigation

The preliminary Geotechnical Risk Register following Ground Investigation is set out in Table H.3.

The probability and impact of a hazard have been judged on a qualitative scale as set out in Table H.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 H.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

Table H.3: Preliminary geotechnical risk register

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Shrinkage / swelling of the clay fraction of soils under the influence of vegetation.	The clays of the weathered bedrock are high heave potential.	Foundations.	Shrinkage or heave of soils and associated damage to foundations.	4	3	12	Design foundations in accordance with NHBC standards. Deepen foundations due to trees as appropriate.
		Floor slabs.	Floor slab failure.	5	4	20	Design floor slabs in accordance with NHBC standards. 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).
Variable lateral and vertical changes in ground conditions.	The shallow weathered bedrock varies across the site	Proposed school building.	Foundation bearing capacity failure, settlement (total and differential).	4	4	16	Design foundations to found below the weathered material.
			Floor slab failure.	5	4	20	Design floor slab as suspended.
		Roads and Pavements.	Settlement (total and differential), of roads and pavements.	3	3	3	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.	1	3	3	Settlements are not anticipated to be significant with regard to services. No additional design requirements envisaged.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.		3		Where soft spots encountered, over-excavate and replace with suitable fill.

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Shallow groundwater.	Water strikes during the site work and subsequent monitoring have proven a shallow groundwater table with considerable seasonal variation.	Construction staff, vehicles and plant operators.	Difficulty with excavation. Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill.	4	2	8	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.
Changing groundwater conditions.	Monitoring during the ground investigations has proven that the groundwater table is highly variable dropping from less that 0.5m bgl during the investigation to 1.5m bgl during subsequent monitoring.	Construction staff, vehicles and plant operators.	Difficulty with excavation. Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill.	4	2	8	Contractor to appoint competent Temporary Works Designer to design temporary works as required, in accordance with BS 5975:2008+A1:2011. Temporary Works Designer to consider in their analysis the impact of a variable water table.
Earthworks – Unsuitability of site won material to be reused as fill.	The shallow weathered bedrock at the site is composed of high plasticity material.	Earthworks control, inability to place and compact fill.	Service limit state failure, excessive and intolerable total and differential settlement.	3	3	9	The design is to describe the processes required to produce suitable fill for reuse. Contractor to design site control measures, plant, equipment and arrangement to comply with processing requirements. Site testing to be undertaken to confirm the works are in accordance with the design. A suitable watching brief and independent verification. Adequate investigation required of soil types and characterisation of the soils to be undertaken during investigation. Some fill may be unsuitable for use.
		Project Budgets - Insufficient fill to complete earthworks.	Additional Costs, due to importation of fill or having to modify designs.	3	2	6	

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
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 I

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 J, 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 I.2: Exposure model – final source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
PAH contamination in the topsoil in the vicinity of TP01.	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	Additional hand pitting is required to determine extent of PAH contamination, as this is not suitable for use in soft landscaped areas. This has now been completed, please refer to the letter report (YYD-HYD-XX-XX-RP-GE-0004_S0_P1 for conclusions.
Radon	Gas ingress via permeable soils and construction gaps	Site users / buildings.	Likely	Severe	High	Radon report states that the entire site is in a Radon Affected Area, with part of the site in an area where 5-10% of homes are estimated to be at or above the action level. Therefore, basic Radon protection measures will be required within school buildings.

Appendix J

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
007	Detailed Quantitative Risk Assessment for Risk to 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
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
020	Pavements and Pavement Foundations	001	30/07/2018
023	Sulphate Recommendations	001	30/07/2018