Hydrock

Rochdale SEND- Passivhaus

Ground Investigation

For Tilbury Douglas on behalf of The Department for Education

Date: *25 January 2023*

Doc ref: *19522-HYD-XX-XX-RP-GE-0002*

DOCUMENT CONTROL SHEET

Issued by	Hydrock Consultants Limited 4 Lakeside Festival Park Stoke on Trent Staffordshire ST1 5RY United Kingdom	T +44 (0)1782 261919 F +44 (0)1782 262020 E stoke@hydrock.com www.hydrock.com
Client	Tilbury Douglas on behalf of The Department for Education	
Project name	Rochdale SEND - Passivhaus	
Project title	Ground Investigation	
BIM reference	19522-HYD-XX-XX-RP-GE-0002	
Project reference	C-19522	
Date	25/01/2023	

Document Production Record		
Issue Number	P04	Name
Prepared by		W. Swinnerton MGeol (Hons) FGS / J. Bradley BSc (Hons) MSc FGS
Checked by		E Cooper BSc MSc C Geol SiLC
Approved by		D Hope BSc (Hons) MSc MCIWEM C.WEM CEnv SiLC

Document Revision Record			
Issue Number	Status	Date	Revision Details
S2	P01	16/12/21	Original
S2	P02	01/03/2022	Updated following completion of scheduled monitoring
S2	P03	18/07/2022	Updated following Coal Mining Investigation
S2	P04	25/01/2023	Updated Client details

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of the above-named Client, 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.

CONTENTS

EXECUTIVE SUMMARY 4
1. INTRODUCTION 7
2. PHASE 1 STUDY (DESK STUDY REVIEW AND FIELD RECONNAISSANCE) 10
3. OUTLINE CONCEPTUAL MODEL 15
4. GROUND INVESTIGATIONS 17
5. GROUND INVESTIGATION RECORDS AND DATA 20
6. GEO-ENVIRONMENTAL ASSESSMENT 24
7. WASTE AND MATERIALS MANAGEMENT 40
8. UNCERTAINTIES AND LIMITATIONS 46
9. RECOMMENDATIONS FOR FURTHER WORK 48
10. REFERENCES 49

Tables

Table 2.1: Natural soil chemistry 13
Table 4.1: Investigation rationale 17
Table 4.2: Summary of site works 17
Table 4.3: Summary of monitoring installations 18
Table 4.4: Geo-environmental analyses of soils 19
Table 5.1: Strata encountered 20
Table 5.2: Groundwater occurrence 21
Table 5.3: Groundwater level data summary 22
Table 5.4: Infiltration test results 22
Table 5.5: Range of ground gas data 23
Table 6.1: Pervasive chemicals of potential concern for which further assessment is required (human health) 26
Table 6.2: Chemicals of potential concern for which further assessment is required (human health) 27
Table 6.3: Asbestos in soil samples (laboratory testing) 27
Table 6.4: Summary of water quality risk assessment protocol 30
Table 6.5: Chemicals of potential concern for which further assessment is required (controlled waters) 30
Table 6.6: Ground gas risk assessment 33
Table 6.7: Residual risks following risk evaluation 36
Table 6.8: Gas protection score by CS and type of building (after BS 8485:2015 +A1:2019) 38

Figures

Figure 1: Site Location 10

Appendices

Appendix A Drawings

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

Appendix C Site Monitoring Data and Ground Gas Risk Assessment

Appendix D Contamination Test Results and Statistical Analysis

Appendix E Waste Assessment

Appendix F Plausible Source-Pathway-Receptor Contaminant Linkages

Appendix G Hydrock Methodologies

Executive Summary

SITE INFORMATION AND SETTING	
Objectives	The objectives of the Phase 2 Ground Investigation are to refine the Preliminary Conceptual Ground Model detailed in the desk study previously compiled by Mott McDonald to determine geo-environmental site conditions, to identify key contamination risks and to identify mitigation requirements to enable development.
Client	Tilbury Douglas on behalf of The Department for Education
Site name and location	Rochdale SEND - Passivhaus, Land west of Heywood Sports Village, West Starkey Street, Heywood OL10 4TW.
Proposed development	The site development proposals are understood to comprise a new Special Education Needs and Disability (SEND) school facility.
GROUND MODEL	
Desk study summary	The site is currently an area of unused grassland (a former sports pitch). The site is approximately 100m x 100m and is relatively flat at approximately of 115m above Ordnance Datum (OD). Review of historical Ordnance Survey mapping indicates: • The site comprised parts of fields until 1956, when four rows of houses are shown in the southern half of the site. • However, by 1977 the properties are no longer present and the site is part of a larger playing field. • Several cotton mills and associated reservoirs are shown to be present within 200m of the site from the late 1800's. • From 1911 a 'refuse destructor' is present 150-200m to the northeast of site and filter beds and tanks are present 150m to the southeast, until 1929 when a tank is shown in the vicinity. The previous desk study indicates a low UXO risk. The geology given in the previous investigation comprises Made Ground up to 0.90m deep, overlying Peat. The Peat overlays Alluvium (interpreted by Hydrock as Glacial Deposits) encountered between 0.80-2.60m bgl, which in turn overlies interlayered Glacial Till and Glaciofluvial Deposits at depths between 5.50-7.00m bgl. The superficial deposits comprise a Secondary undifferentiated Aquifer and The Pennine Lower Coal Measures is classified as a Secondary A Aquifer. The River Roch flows from east to west approximately 350m northwest of the site. There are two waste management sites recorded within 250m of the site.
Ground and groundwater conditions encountered by investigation	The ground conditions, as proven by Hydrock and the previous investigation completed at the site, comprise: • Made Ground – between 0.00m and 1.50m below ground level (bgl), comprising a 'Made Ground-Topsoil' of clayey, occasionally gravelly fine to coarse SAND, to occasionally a very sand CLAY, over a 'General' Made Ground of gravelly sandy CLAY and/or clayey gravelly SAND, with fragments of brick, quartzite, sandstone, tile, glass, wood, concrete and occasional to rare clay pipe fragments, plastic, ceramics, fabrics and metal; over • Peat – between 0.35m and 3.00m bgl, comprising plastic to firm black and brown fibrous PEAT with wood fragments; over • Glacial Deposits (Glacial Till and Glaciofluvial Deposits) – between 0.80m to >12.45m bgl, comprising soft sandy slightly gravelly CLAY, with occasional bands of clayey gravelly SAND of varying thickness.

	Groundwater was encountered at depths between 0.75m bgl and 10.70m bgl during the investigation. Water levels recorded post-fieldwork ranged from 0.60m bgl to 9.85m bgl (112.60m OD to 102.38m OD). Shallow groundwater was encountered within the Peat. Groundwater was also sporadically recorded within the Glacial Till in one instance at 1.70m bgl and at depth at 9.56-10.70m bgl. Within the Glacial Till, no infiltration was recorded.
GEO-ENVIRONMENTAL CONCLUSIONS	
Conclusions of contamination Generic risk assessment	Human health: • Asbestos fibres (<0.001%v/v of chrysotile) measured in soil samples in the Made Ground. • Chloroethene (vinyl chloride) has been tested in the original investigation, all results were recorded as less than the laboratory limit of detection. It should be noted, the limit of detection is in excess of the GAC but Hydrock do not believe this poses a risk. • Slightly elevated concentrations of Chloromethane (maximum value of 0.033mg/kg vs a GAC of 0.019mg/kg). Plant growth: • No exceedances. Controlled Waters: • Soil leachate and groundwater samples exceed WQT for Copper, Iron, Manganese, Ammoniacal Nitrogen, pH and petroleum hydrocarbons fractions, as an indicator of potential groundwater risk. Ground gases or vapours: • Moderate risk from ground gases and CS2 conditions apply. Radon: • The site is not in a Radon Affected Area. Construction materials: • Plastic products may be at risk from high concentrations of petroleum hydrocarbons (TPH) within the Made Ground in the Northeast of the site. Water supply pipes: • This is a brownfield site and the presumption in the guidance is that barrier pipe will be used. However, the investigation and assessment has indicated no significant Contaminants of Concern and as such standard pipework may be suitable for the site following negotiations with the supply company.
Proposed mitigation measures	The mitigation measures proposed to remove unacceptable risks include: • The installation of a 450mm cover system in in public open space, comprising a subsoil beneath a topsoil thickness of between 150mm and 300mm (PL1). • Installation of ground gas mitigation measures to comply with CS2 conditions (as described in Section 6.10.1) (PL2 and PL4). • Consultation with the pipework manufacturer and installation of suitable pipework (PL5). The methodology for the remediation should be presented in a Remediation Strategy, which will need to be submitted to the warranty provider and the regulatory authorities for approval. In addition, the production of a Materials Management Plan and its approval by a Qualified Person will be required to allow reuse of suitable material at the site. A verification report completed by a competent independent geo-environmental specialist will be required following completion of any remedial works.
Waste management	Excavated soils scheduled for off-site disposal are likely to be classified as non-hazardous waste.

Coal Mining Risk	On the basis that coal (intact or worked) was not encountered in RO01, the site does not appear to have been subject to historical shallow coal workings (i.e., less than 30m depth below the ground surface). As such, no further consideration is required to coal mining risk for the proposed development
FUTURE CONSIDERATIONS	
Further work	Following the ground investigation works undertaken to date, the following further works will be required: • 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 and Verification Plan (and agreement with the regulatory bodies and the warranty provider); • production of a Materials Management Plan relating to reuse of soils at the site and import of soils to the site; • remediation and mitigation; and • verification of the remediation and mitigation works.

This Executive Summary forms part of Hydrock Consultants Limited report number 19522-HYD-XX-XX-RP-GE-0002 and should not be used as a separate document.

1. INTRODUCTION

1.1 Terms of reference

In September 2021, Hydrock Consultants Limited (Hydrock) was commissioned by Tilbury Douglas on behalf of The Department for Education (the Client) to undertake a Phase 2 geo-environmental ground investigation off land west of Heywood Sports Village, West Starkey Street, Heywood OL10 4TW.

The site is currently a disused playing field.

Hydrock understands that the proposed development is to comprise a new Special Education Needs and Disability (SEND) school facility. A preliminary landscape master plan of the proposed development layout (Ellis Willams, October 2021. Drawing Ref: RSC-EWA-ZZ-ZZ-DR-L-79001), is presented in Appendix A

The works have been undertaken in accordance with Hydrock's proposal referenced (19522-GNMA-HYD-FP-0001-REV-B dated 14th September 2021) and the Client's instructions to proceed (email dated 22nd September 2021).

1.2 Objectives

The works have been commissioned to assist in discharging planning conditions and to assist with the design of the development.

A Phase 1 Desk Study (prepared by others; see Section 1.4 below) was prepared to formulate a preliminary Ground Model and an Initial Conceptual Model of the site to identify, and make a preliminary assessment of key geo-environmental and geotechnical risks to the proposed development. A copy was provided to Hydrock by the Client.

The objective of the Phase 2 Ground Investigation is:

- to resolve uncertainties identified in the Phase 1 Desk Study by refining and updating the preliminary Ground Model, determining 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 confirm whether shallow coal seams are present below the site area.

1.3 Scope

The scope of the Phase 2 Ground Investigation comprises:

- An assessment of the findings of the previous Desk Study including the Preliminary Conceptual Ground Model and Preliminary Risk Assessment;
- a ground investigation including trial pitting and windowless sampling, to:
  - » obtain data on the ground and groundwater conditions of the site;
  - » allow collection of samples for chemical laboratory analysis;
  - » install gas and groundwater wells;
- gas concentration and groundwater level monitoring;
- groundwater sampling;

- chemical laboratory analysis;
- updating of the preliminary Ground Model;
- 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'.

Please note that this commission does not include geotechnical investigation and assessment.

1.4 Available information

The following documents, reports etc have been provided to Hydrock by Tilbury Douglas on behalf of The Department for Education for use in the preparation of this report:

- Mott MacDonald. October 2019. 'SEN Schools North West – Heywood Geotechnical and Geo-environmental Desk Study', Ref: 410640-03-A (Mott MacDonald, 2019);
- Mott MacDonald. August 2020. 'HVA SEND Schools North West – Heywood – Geological Technical Note', Ref: N/A (Mott MacDonald, 2020);
- Geotechnics. July 2020. 'Heywood School, Rochdale Factual Report – Ground Investigation', Ref: 9228L/ea2 (Geotechnics, 2020); and
- Coal Authority, October 2021. Consultants Coal Mining Report. Heywood Sports Centre, OL10 4TW, Ref. 51002685361001, 01.10.21.
- Ellis Williams, October 2021, Preliminary Landscape Masterplan, Rochdale SEND, Ref. RSC-EWA-ZZ-ZZ-DR-L-79001, REV P4.

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

In addition, Hydrock has completed a Coal Mining Risk Assessment for the site (Hydrock, October 2021. Ref: 19522-HYD-XX-XX-RP-GE-0001).

The content of the provided desk study (Mott MacDonald, 2019) is summarised in Section 2. This content, along with the Coal Mining Risk Assessment, where relevant, has been used to formulate the preliminary Conceptual Site Model as the basis for preparing the preliminary geo-environmental exposure model presented in Section 3.

1.5 Regulatory context and guidance

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

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

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

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.

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.

Throughout the report the term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination).

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

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

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

2.1 Introduction

Hydrock has been provided with a Desk Study for the site prepared by others (as detailed in Section 1). Hydrock generally agrees with the findings of the Desk Study and the following section is a summary of the pertinent information presented therein, supplemented by additional information as necessary.

Hydrock has undertaken an updated field reconnaissance survey on 1st November 2021 to visually assess contaminant sources and receptors and ensure the site conditions as reported in the desk study are similar to current conditions. The weather during the updated field reconnaissance survey was heavy rain and cold.

2.2 Site location

The site is located in the southwest corner of the wider site of Heywood Sports Village, in the town of Heywood, in the Metropolitan Borough of Rochdale, Greater Manchester (National Grid Reference SD 385123, 411132).

2.3 Site description

The site is approximately 100m x 100m as per the extents shown in Figure 1. The site is an area of unused grassland, bordered to the north by sports pitches, to the east by Heywood Sports Village and a carpark, to the south by West Starkey Street and to the west by a row of trees and properties along Cedar Avenue. The site is flat-lying and available ordnance survey mapping shows the site to have an approximate elevation of 115m AOD. The land to the north and the east is around 1m higher. The site is currently owned by Rochdale Borough Council and site access is available through Heywood Sports Village.

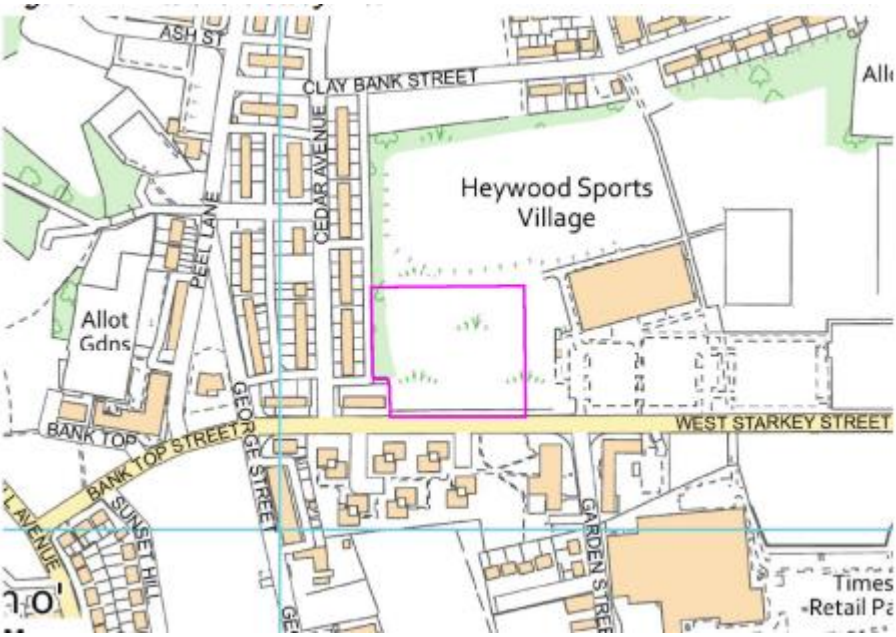


Figure 1: Site Location

2.4 Site history

The history of the site has been reviewed from historical OS maps at various scales (as presented in the provided Geotechnical and Geo-environmental Desk Study) to identify any previous land use on site or nearby that may pose a geo-environmental risk to the proposed scheme. In summary, the site appears not to have changed from fields shown on the earliest available maps from 1851, until circa 1956, when four rows of houses are shown under construction on the southern half of the site. The houses ran north-south from West Starkey Street. However, by 1977 the properties are no longer present and the site is part of a larger playing field. The site has not been developed in the subsequent years.

The surrounding area has seen residential, commercial and industrial development over the years. Of note, several cotton mills and associated reservoirs are shown to be present within 200m of the site from the late 1800's. From 1911 a 'refuse destructor' is present 150-200m to the northeast of site and filter beds and tanks are present 150m to the southeast, until 1929 when a tank is shown in vicinity. From 1929 the Moss Iron Works are shown adjoining the Times Cotton Mill, 250m to the southeast. From 1957 the Times Mill (now an Electrical Engineering company) and the Iron Works have expanded significantly, until 1984 when the iron works is redeveloped as a Supermarket.

The current Heywood Sports Village replaces a previous swimming pool and sports village directly east of the site. More recently the site was an old football pitch.

2.5 Geology

The superficial geology comprises Glaciofluvial Deposits (sand and gravel) present in the southwest and centre of the site with Glacial Till (clays, sands, gravels and cobbles) present over the remainder of the site.

The solid geology comprises Pennine Lower Coal Measures Group, consisting of interbedded Mudstone, Siltstone, Sandstone and coal seams, of Carboniferous age.

The Coal Mining Risk Assessment, states that two seams of coal (possibly the Arley Coal and Smith (Bottom Neddy) Coal), sub crop within 250m of the north-eastern corner of the site, with the one seam (possibly Smith Coal) being very close to the north-eastern corner of the site. The Arley Coal was formerly referred to as the Rowley Mine Coal. The abandonment plan (Ref 16820/6) shows the 'crop of the Royley Mine Coal' seam to the north east of the site area.

A geological fault with a downthrow to the east, is located 300m to the west of the site.

The ground conditions proven by a previous investigation (Geotechnics, 2020), comprise:

- Made Ground (gravelly silty clayey SAND with cobbles) up to 0.90m bgl.
- Peat (spongy fibrous PEAT with rootlets and plant remains) up to 0.80-2.60m bgl, increasing in thickness from southwest to northeast from 0.30 to 1.65m.
- Alluvium (very soft to soft silty sandy gravelly CLAY grading to slightly sandy gravelly SILT) up to 5.50-7.00m bgl.
- Interlayered Glacial Till (stiff sandy gravelly CLAY) and Glaciofluvial Deposits (medium dense gravelly silty SAND) to at least 12.50m bgl.

The shallow ground conditions were described as soft and loose, with Peat being particularly susceptible to settlement via consolidation and compression.

As detailed in the previous report, the strata underlying the Peat and Made Ground has been classified as Alluvium. While a case can be made for classifying these clays as Alluvium, Hydrock believes this should be classified as Glacial deposits due to the unsorted nature of the clays encountered and the published BGS mapping information.

2.6 Hydrogeology

The Glacial Till and Glaciofluvial Deposits present on site are classed by the Environment Agency as a Secondary undifferentiated Aquifer and are likely to provide a minor/very limited base flow contribution to the River Roch to the northwest. The Pennine Lower Coal Measures is classified as a Secondary A Aquifer and is inferred to provide minor base flow contribution to surface water bodies on a regional basis.

The site is not in any Source Protection Zone and there are no active licensed groundwater abstractions within 250m of the site.

The environmental data report indicates a potential for groundwater flooding of property situated below ground level and to occur at the surface.

In the previous investigation, groundwater was struck at 10.70 - 10.90m bgl within Glaciofluvial Deposits and was recorded at 9.60 – 9.90m bgl across six monitoring visits.

2.7 Hydrology

The primary natural drainage feature is the River Roch approximately 350m to the northwest, flowing east to west. Reference to the Environment Agency web site shows the site is located within the catchment of the North West River Basin District, with the specific river water body being the Roch Spodden to Irwell. The current (2019 cycle 2) overall status under the Water Framework Directive is 'moderate'.

There are no licensed surface water abstractions within 250m of the site.

2.8 Flood risk

The desk study information indicates the proposed development is in Flood Zone 1 (with a low probability of flooding from rivers or the sea). However, a thin strip of land along the western boundary of the site and the car park of the sports village, is at a low risk (1000-year flood risk).

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

2.9 Waste management

There are two waste management sites recorded within 250m of the site.

The Landmark Envirocheck report presented within the desk study indicates one historical landfill ((Destructor Works) Peel Lane) located approximately 140m to the northwest of the site. The last input date is recorded as the 26th April 1975, with specified waste types being; inert, industrial, commercial, household waste and liquid sludge. The licence holder was Rochdale Metropolitan Borough Council. The site also appears to have been used as a recycling centre up until 12th November 2015. It currently has a licence issued to Mayer Skip and Excavation Limited for HCI Wastes TS + treatment as of the 15th August 2017.

A scrap yard was also present off Britannia Street, approximately 235m to the southwest of the site. The Licence (metal recycling) was surrendered on 13th March 2019.

2.10 Regulatory information

Information provided in the previous desk study indicate the following significant regulatory controls in the general area of the site:

- a (revoked) discharge consent for discharge of public sewage (storm surge overflow) into the Wrigley Brook, located 217m west of the site;
- two pollution incidents have been recorded within 250m of the site. Both were recorded as minor incidents 205 and 208m northwest of the site involving fire water/foam entering the River Roch; and
- Three active licenced industrial activities (a garage, a petrol filling station and a road haulage service) are listed in the contemporary trade directory within 100-250m of the site.

2.11 Consultations

The desk study notes that Rochdale Borough Council (2019) highlighted during a meeting that rubble or 'fly tipped waste' is present bordering the northwest corner of the site.

2.12 Natural soil chemistry

Information contained within the environmental report contained within the desk study gives indicative (estimated) concentration values for the natural soils at the site for a selection of Contaminants of Potential Concern (CoPC). These have been reproduced in Table 2.1.

Table 2.1: Natural soil chemistry

Element	Arsenic	Cadmium	Chromium	Lead	Nickel
Concentration (mg/kg)	<15	1.80-2.20	60-90	<100	15-30

2.13 Radon

The previous desk study indicates that the site is in a Radon Affected Area where recorded radon levels in <1% of homes are at or above the action level, no radon protection measures are required for new buildings at this location in line with current guidance.

2.14 Unexploded ordnance (UXO)

The previous desk study indicates a low risk and no further assessment is required with regard to UXO in relation to ground investigation. Further assessment may be considered prudent for construction activities.

2.15 Reliability of previous data

Data from the previous ground investigation reports listed in Section 1.4 have been considered during the preparation of this report were considered to be reliable. The section below provides comment as to the applicability of the various data available.

2.15.1 Geological data

The geological data from previous investigation are generally consistent with the anticipated ground conditions from BGS sources and has been utilised in this report. Chemical test data

The most recent previous investigations on the site containing chemical test data for soil were conducted in 2020 and is MCERTS accredited. This chemical test data for soil from previous report is able to be used as part of the current ground investigation.

2.15.2 Groundwater data

The groundwater data within the historical investigation dates back to June 2020. It is Hydrock's opinion that the groundwater data from historical report is able to be used as part of the current ground investigation.

2.15.3 Ground gas data

Ground gas data are available for the site, which appear to have been collected in accordance with current standards and guidance. The available data is suitable for use as part of an updated assessment.

3. OUTLINE CONCEPTUAL MODEL

3.1 Introduction

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

3.2 Ground model

The preliminary ground model presented in Section 2 provides an understanding of the ground conditions and is the basis for preparing the preliminary geo-environmental exposure model (Section 6).

3.3 Geo-environmental exposure model

3.3.1 Context

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

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

3.3.2 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.

3.3.2.1 Potential on-site sources of contamination

- Made Ground, associated with historical construction activities and imported fill, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAH and petroleum hydrocarbons (S01).
- Coal tar, potentially present in the bituminous bound pavements (S02).
- Ground gases (carbon dioxide and methane) from organic materials in the Made Ground, peat and alluvial deposits (S03).

3.3.2.2 Potential off-site sources of contamination

- Leachate from landfilled waste including household, commercial and industrial, asbestos, animal processing wastes located 150-200m to the northwest (S04).
- Backfill, associated with the landfill located to the northwest of the site, possibly including PAH and petroleum hydrocarbons (S05).
- Ground gases (carbon dioxide and methane) from organic materials in the backfill of the landfill to the northeast of the site (S06).

3.3.3 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 Pennine Lower Coal Measures (R03).
- Surface water: existing drainage likely leading to the River Roch 350m to the northwest (R04).

3.3.4 Potential pathways

The following potential pathways have been identified.

- Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).
- Methane ingress via permeable soils and/or construction gaps (P02).
- Root uptake by plant (P03).
- Migration of contaminant via leachate migration through the unsaturated zone in the Peat/ Alluvium (P04).
- Migration of contaminant from the groundwater within the superficial deposits to the groundwater within the Pennine Lower Coal Measures aquifer (P05).
- Surface water, via drainage discharge (P06).
- Surface water via base flow from groundwater (P07).

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

The above sources, pathways and receptors have been considered as part of the Preliminary Risk Assessment in accordance with LCRM (2019), are considered to be plausible in the context of this site and have been carried forward for investigation and assessment. The investigation is presented in Section 5 and the assessment is presented in Section 6. An assessment of the Source – Pathway – Receptor linkages is undertaken following the assessment (Section 6) and is presented in Appendix F (Table F.1).

4. GROUND INVESTIGATIONS

4.1 Investigation rationale

The ground investigation rationale was based on the findings of the preliminary risk assessment and is summarised in Table 4.1.

For the investigation rationale of the historical investigations, please refer to the historical reports referenced in section 1.4.

Table 4.1: Investigation rationale

Location	Purpose
TP01-03, 05,07-14	To assess shallow ground conditions in the areas around the proposed development. To allow collection of samples for contamination testing.
TP04,06,12A	To assess shallow ground conditions in the areas around the proposed development. To allow collection of samples for contamination testing. To allow infiltration tests to be completed
WS01-05	To assess shallow ground conditions within footprint of the proposed School. To allow collection of samples for contamination testing. Installation of gas and groundwater monitoring and sampling wells. Non targeted.
RO01	Completed to the north east corner of the proposed structure to confirm whether shallow coal seams are present below the site area.

4.2 Site works

The fieldwork took place under two mobilisations, the main investigation was completed between 1st November and 4th November 2021, and the coal mining investigation was completed on 22nd June 2022 and are summarised in Table 4.2. 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 19522-HYD-XX-XX-DR-GE-0002) in Appendix B.

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

The weather conditions during the Hydrock fieldwork and for the previous week were a mixture of heavy rain and sunny spells.

Table 4.2: Summary of site works

Activity	Method	No.	Depth Range (m bgl)	In situ tests	Notes (e.g. installations)
Drilling, Pitting and Probing					
Boreholes	Windowless sampler	8	5.00	SPT in four boreholes	63mm HDPE wells with gas taps in all eight boreholes
	Rotary Open Hole	1	30.00	N/A	Water flush drilling. 63mm HDPE well with gas tap installed

Activity	Method	No.	Depth Range (m bgl)	In situ tests	Notes (e.g. installations)
Trial pits	Machine (JCB 3X)	15	2.20-3.40	-	
Other in situ testing or monitoring					
Infiltration	BRE 365	3	2.20-3.40	-	In TP04,06,12A

Wells for monitoring groundwater levels and ground gas concentrations, and to facilitate the sampling of groundwater, were installed in all of the windowless sampler boreholes and also in RO01. A summary of the monitoring well installations is presented in Table 4.3.

Table 4.3: Summary of monitoring installations

Location	Ground level (m OD)	Standpipe diameter (mm)	Screen top and base depth (m bgl)	Screen top and base elevation (m OD)	Strata targeted
WS01	113.2	50	0.50 to 1.45	112.7 to 111.75	Peat
WS02	112.96		0.50 to 1.50	112.46 to 111.46	Made Ground
WS03	112.66		1.00 to 3.00	111.66 to 109.66	Made Ground and Peat
WS04	113.08		0.50 to 1.00	112.58 to 112.08	Peat
WS05	113.05		0.50 to 1.40	112.55 to 111.65	
WS06	112.63		0.50 to 2.50	112.13 to 110.13	Peat and Glacial Till
WS07	112.51		0.50 to 1.50	112.01 to 111.01	Peat
WS08	112.26		1.00 to 2.00	111.26 to 110.26	
RO01	112.51		11.00 to 19.50	101.51 to 93.01	Pennine Lower Coal Measures

4.3 Geo-environmental testing

4.3.1 Sampling strategy and protocols

No specific features were identified during the desk study and walkover as requiring targeted investigation and a reasonably even spacing was used. No specific sampling statistics or grid were utilised in this instance.

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

4.3.2 Geo-environmental monitoring

Gas monitoring boreholes have been monitored on six occasions in the window sampler boreholes and on three occasions in RO01, and the scheduled monitoring is now complete. The results are presented in Appendix C.

4.3.3 Geo-environmental laboratory analyses

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

The chemical test certificates for testing undertaken as part of historical investigations are provided in the relevant reports.

The geo-environmental analyses undertaken on soils are summarised in Table 4.4.

Table 4.4: Geo-environmental analyses of soils

Determinand Suite	Made Ground	Peat
Hydrock Data		
Hydrock minimum suite of determinands for solids*	10	2
Speciated aliphatic and aromatic banding Total petroleum hydrocarbons by HS-GC/MS and GC/FID (Hydrock Tier 2 TPH Suite)	2	0
Volatile organic compounds (VOC target list plus TIC) by HS-GC/MS	2	0
Semi-volatile organic compounds (SVOC target list plus TIC) by GC-MS	2	0
Asbestos quantification	2	0
*Hydrock minimum soil suite comprises: As, B (water soluble), Be, Cd, Cr (total), Cr (VI), Cu, Hg, Ni, Pb, S (elemental), Se, V, Zn, cyanide (total), sulphide, pH, asbestos fibres, speciated polynuclear aromatic hydrocarbons (PAH, by GC-FID), total phenols and fraction of organic carbon		

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

The groundwater chemical test data (historical data) is interpreted and assessed in Section 7.5.

5. GROUND INVESTIGATION RECORDS AND DATA

5.1 Physical ground conditions

5.1.1 Summary of strata encountered

The following presents a summary of the 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 data from the Hydrock investigation discussed in Section 4 as well as any relevant, reliable data from previous investigations noted in Section 1.4, and discussed in Section 2, are used from this point forward.

Details of the Hydrock ground investigation works are provided in the logs in Appendix B; previous data are provided in relevant reports; a summary of the ground model is presented in Table 5.1; and the individual strata are described in the sections below.

Table 5.1: Strata encountered

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Thickness (m) (range)	Thickness (m) (average)
Made Ground	0.00	0.35-1.50	0.35-1.50	0.69
Peat	0.35-1.20	0.90-4.50	0.30-4.10	
Glacial Deposits	0.80-4.50	10.50 - >12.45	6.00 - >10.55	n/a

5.1.2 Made Ground

Below the surface covering (grass), Made Ground was recorded across the entire site. In general, there are two main types of Made Ground:

- ‘Made Ground-Topsoil’, was generally found across the site but notably absent along the northern part of the site where a 'General' Made Ground was encountered. The Made Ground-Topsoil was found to depths of between 0.10m and 0.30m, with an average thickness of 0.20m. It consists of a clayey, occasionally gravelly fine to coarse SAND, to occasionally a very sand CLAY.

  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.
- ‘General’ Made Ground, was found across the entire site to depths of between 0.35m and 1.50m, with an average thickness of 0.50m. It comprises a mixture of gravelly sandy CLAY and/or clayey gravelly SAND, with fragments of brick, quartzite, sandstone, tile, glass, wood, concrete and occasional to rare clay pipe fragments, plastic, ceramics, fabrics and metal.

5.1.3 Peat

Peat was encountered underlying the Made Ground across the majority of the site. Peat is between 0.30m and 4.10m thick.

The Peat was generally present across the site but increased in thickness from west to east.

The Peat generally consisted of plastic to firm black and brown fibrous PEAT with wood fragments and a mild humic odour.

5.1.4 *Glacial Deposits*

Glacial Deposits (Glacial Till and Glaciofluvial Deposits) were encountered underlying the Peat and Made Ground across the site, with the base proven in one location only (RO01) at 10.50m bgl. In the previous investigation by others the base of the Glacial Deposits were unproven but found to be greater than 10.50m in thickness.

This generally consisted of soft sandy slightly gravelly CLAY, with occasional bands of clayey gravelly SAND of varying thickness. Gravel is predominantly of mudstone and sandstone.

These deposits are considered to represent Glacial Till and Glacio-Fluvial Deposits. In the previous report, the strata underlying the Peat and Made Ground has been classified as Alluvium. While a case can be made for classifying these clays as Alluvium, Hydrock has classified these deposits as Glacial deposits due to the unsorted nature of the clays encountered and the published BGS mapping information.

5.1.5 *Pennine Lower Coal Measures Formation (PLCM)*

The PLCM formation was encountered only in RO01 at 10.50m bgl underlying the Glacial Deposits, consisting of grey mudstone with sandstone bands to 16.50m bgl onto grey shaley mudstone with coal traces to 19.50m bgl over grey mudstone with sandstone bands to the full depth of the borehole at 30.0m bgl.

No coal seams were encountered in the PLCM in RO01, and no loss of flush was experienced during drilling.

5.2 Groundwater

5.2.1 *Groundwater observations and levels*

Groundwater encountered during the investigation is listed in Table 5.2. 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 5.2: Groundwater occurrence

Stratum	Date	Location	Fieldwork		Comment
			Groundwater observation (m bgl)	Rose to after 20 mins (m bgl)	
Made Ground	02/11/21	WS02	0.95		Slight seepage
Peat	03/11/21	TP01	1.20		
		TP03	0.80		
		TP06	1.30		
		TP07	1.00		
		TP11	0.90		
		TP12	1.20		
		TP13	1.20		Sudden inflow

Stratum	Date	Location	Fieldwork		Comment
			Groundwater observation (m bgl)	Rose to after 20 mins (m bgl)	
	02/11/21	WS04	0.80		Slight seepage
	01/11/21	WS05	0.75		
		WS06	1.10		
Glacial Till	26/05/20	BH101	10.70		-
	27/05/20	BH102	10.50		-
	02/11/21	WS04	1.70		Slight seepage

Groundwater levels recorded during post-fieldwork monitoring are summarised in Table 5.3.

Table 5.3: Groundwater level data summary

Stratum	Date range	Location	Post-fieldwork monitoring	
			Depth to groundwater (range) (m bgl)	Groundwater elevation (range) (m OD)
Made Ground	15/11/21-24/01/22	WS02	0.75 - 1.20	112.45 - 112.00
Peat	08/06/20-10/07/20	BH102	1.13-1.60	111.52-111.99
	15/11/21-24/01/22	WS01	0.60 - 0.82	112.36-112.14
		WS03	1.35 - 1.86	111.31 - 110.81
		WS04	0.80 - 0.95	112.28 - 112.13
		WS05	0.65 - 1.15	112.40 - 111.90
		WS06	1.10 - 1.60	111.53 - 111.03
		WS07	0.62 - 1.09	111.89 - 111.42
		WS08	1.45 - 2.20	110.81 - 110.06
Glacial Till	02/07/20-17/07/20	BH101	9.56-9.85	102.38-102.67
PLCM	28/06/22-13/07/22	RO01	9.95-10.85	102.56-101.66

5.2.2 *Infiltration tests*

The results of the infiltration testing undertaken are summarised in Table 5.4. The results sheets are presented in Appendix B.

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

Table 5.4: Infiltration test results

Stratum	Location	Depth to base of pit (m bgl)	Infiltration rate (m/s)			
			Run 1	Run 2	Run 3	Range
Glacial Till	TP04	2.20	No infiltration			-
	TP06	3.40				
	TP12A	2.20				

5.2.3 Groundwater summary

In general, shallow groundwater was encountered within the Peat in the lower half of the stratum between 0.60-2.20m bgl. Groundwater was also sporadically recorded within the Glacial Till in one instance (WS04) at 1.70m bgl and at depth within the two cable percussive boreholes (BH101 and 102) at 9.56-10.70m bgl. Within the Glacial Till, no infiltration was recorded.

Within RO01 groundwater was encountered at the boundary between the Glacial Till and the PLCM at 9.95-10.85m bgl. The top of the response zone in RO01 is 11.0m bgl so the groundwater body found within the PLCM is above the level of the response zone.

5.3 Ground gases (carbon dioxide and methane)

Records from the gas monitoring boreholes are presented in Appendix C and summarised in Table 5.5.

A total of six monitoring visits have been undertaken, and the scheduled monitoring as part of the current commission is now complete. The data are assessed in Section 6.

A total of three monitoring visits have been undertaken at RO01. The data are assessed in Section 6.

Table 5.5: Range of ground gas data

Stratum	Methane (%)	Carbon dioxide (%)	Oxygen (%)	Steady flow rate (l/hr)	Comment
Made Ground (WS02)	<0.10	3.30 - 3.80	16.80 - 18.70	<0.10 - 0.10	-
Made Ground and Peat (WS03)	0.10 - 1.00	12.50 - 15.70	6.00 - 21.00	<0.10-2.20	-
Peat	<0.10 - 12.70	0.20 - 18.30	3.10 - 20.60	<0.10 - 3.20	28 out of the 36 methane readings are below detection. Seventeen out of the 30 carbon dioxide readings exceed 5%.
Peat and Glacial Till (WS06)	<0.10	1.00 - 3.70	19.00 - 21.00	<0.10 - 2.30	-
Glacial Till/ Glaciofluvial Deposits (BH102)	<0.10-0.10	0.20-1.20	14.20-20.60	<0.10-0.10	-
PLCM	0.1 - 1.2	0.10 – 2.50	17.6 – 20.6	<0.1	Peak methane concentration exceeds 1% on one occasion. Steady Methane concentrations are below the limit of detection over the three scheduled visits.

6. COAL MINING

6.1 Background

Hydrock completed a Coal Mining Risk Assessment (CMRA) for the site in October 2021 (report ref. 19522-HYD-XX-XX-RP-GE-0001) which concluded the following:

- 'a Medium to High risk that shallow unrecorded (i.e., less than 30m depth below the ground surface) coal workings could be present below the site. It is possible that the Smith Coal and Arley Coal seams are present at shallow depth below the site. It is recommended that at least 1 No rotary open-hole borehole is completed to the north east corner of the proposed structure to confirm whether shallow coal seams are present below the site area. If shallow seams are encountered Hydrock suggest that additional rotary open-hole boreholes are completed to investigate whether these seams have been worked.
- If evidence of shallow mine workings is confirmed, the workings will require treatment by a programme of drilling and grouting beneath the proposed development. This will require to be designed and a specification of the treatment to be completed for Coal Authority and Rochdale BC Planning/Building Control approval.'

6.2 Ground Investigation

Hydrock carried out the supplementary ground investigation on 22/06/2022 consisting of one rotary open hole (RO01) to 30.0m bgl, as shown on Hydrock drawing 19522-HYD-XX-XX-DR-GE-0002-S2-P03. The borehole was drilled using a water flush medium and installed with a gas and groundwater monitoring standpipe with the response zone between 11m bgl and 19.5m bgl. A rig-mounted gas monitor was utilised during drilling work and no gas was detected above the limit of detection during the work.

The PLCM formation was encountered in RO01 at 10.50m bgl underlying the Glacial Deposits, consisting of grey mudstone with sandstone bands to 16.50m bgl onto grey shaley mudstone with coal traces to 19.50m bgl over grey mudstone with sandstone bands to the full depth of the borehole at 30.0m bgl.

No coal seams were encountered in the PLCM in RO01, and no loss of flush was experienced during drilling.

6.3 Conclusion

On the basis that coal (intact or worked) was not encountered in RO01, the site does not appear to have been subject to historical shallow coal workings (i.e., less than 30m depth below the ground surface). As such no further consideration is required to coal mining risk for the proposed development.

7. GEO-ENVIRONMENTAL ASSESSMENT

7.1 Updated conceptual model

7.1.1 Updated ground model

The preliminary ground model developed from the desk study and field reconnaissance survey (Section 3) has been updated using the findings of the ground investigation and is presented in Section 5. This ground model is the basis for the geo-environmental assessment presented in this section.

7.1.2 Updated exposure model

Following the ground investigation, the plausible contaminant sources, receptors and pathways identified in the preliminary geo-environmental exposure model (Section 3), have been updated or confirmed as follows.

7.1.2.1 Sources

Coal tar has been removed as a potential source from the exposure model as no bituminous bound pavement or fragments were noted in any of the exploratory holes.

Leachate, ground gases from landfilled waste and backfill, associated with the landfill (possibly including PAH and petroleum hydrocarbons), have been removed as a potential source from the exposure model, due to the distance from the site and no associated visual or olfactory evidence was noted during the investigation.

7.1.2.2 Receptors

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

7.1.2.3 Pathways

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

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

7.2 Risk assessment approach

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

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

The data sets used in the assessment comprise the analytical results obtained by Hydrock as listed in Section 4 together with any reliable data from previous investigations as listed in Section 1.4.

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

7.3 Human health risk assessment

This is a Tier 2 assessment using soil screening values applicable to the residential with plant uptake, CLEA land use scenario.

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 with 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 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 D.

7.3.1 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 Made Ground and Peat.

7.3.2 Risk estimation (including statistical testing)

7.3.2.1 Statistical assessment – Made Ground

In accordance with the guidance provided by the CIEH (May 2008) the 95th upper confidence level on the true mean (US_{95}) has been calculated from the sample data. Reference to the methodology for statistical assessment is given in Appendix G.

Based on a US_{95} exceedance of the GAC, the pervasive chemicals of potential concern which require further assessment are summarised in Table 7.1.

Table 7.1: Pervasive 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)	US_{95} (mg/kg)	No. samples exceeding generic criterion
Made Ground							
No Exceedances							

7.3.3 Risk estimation (without statistical testing)

7.3.3.1 Hydrock default list of determinands - Peat

Based on individual test results that exceed the GAC, the chemicals of potential concern which require further assessment are summarised in Table 7.2.

Table 7.2: 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
Peat						
No Exceedances						

7.3.3.2 Asbestos

No visual evidence of Asbestos Containing Materials (ACM) was identified in any of the exploratory hole locations completed in Hydrock's investigation or the previous one. However, asbestos has been identified by laboratory testing of soil samples as provided in Table 7.3.

Table 7.3: Asbestos in soil samples (laboratory testing)

Location	Depth (m bgl)	% Asbestos (w/w)	Comment
TP12	0.30	<0.001	Fibres (chrysotile).
WS05	0.40	<0.001	

The presence of Asbestos Containing Materials and asbestos fibres in soil requires further consideration.

7.3.3.3 Petroleum hydrocarbons (PHC)

Non-targeted analysis of both the Made Ground and Peat have not identified petroleum hydrocarbons in soils which exceed the GAC for TPH fractions.

The presence of petroleum hydrocarbons on site does not require further consideration.

7.3.3.4 Volatile organic compounds (VOC) - soils

Non-targeted analysis of VOC was undertaken of the Made Ground and Peat. The following VOC have been identified at concentrations in excess of the GAC for the indoor air pathway:

- TP101 1.50m bgl (within the Peat): chloromethane (0.033mg/kg vs a GAC of 0.019mg/kg); and
- CPT101 0.25m bgl (within the Made Ground): chloromethane (0.024mg/kg vs a GAC of 0.019mg/kg).

These exceedances require further consideration.

Chloroethene (vinyl chloride) has been tested for as part of the previous investigation (TP101-TP104 and CPT101) and all results were recorded at less than the laboratory limit of detection.

However, the laboratory limit of detection is in excess of the GAC. Nevertheless, Hydrock does not believe that the Chloroethene (vinyl chloride) exceedances require further consideration, as these

exceedances would only be slight and as they are below the laboratory limit of detection, the true concentration may be much less than that reported.

7.3.3.5 Semi-volatile organic compounds (SVOC) - soils

Non-targeted analysis of SVOC was undertaken of the Made Ground and Peat. No SVOC have been identified at concentrations in excess of the GAC for the indoor air pathway.

7.3.4 Risk evaluation

The screening exercise has identified asbestos and chloromethane in Made Ground, and Peat at concentrations above the GAC. These are considered further below to assess if the exceedance may be acceptable with respect to the proposed development. The phrase 'further assessment' does not necessarily mean that the soil is 'contaminated' or not fit for use.

7.3.4.1 Asbestos

No Asbestos Containing Materials have been identified visually. However, there were a number of exploratory hole locations where asbestos fibres (<0.001%v/v of chrysotile) have been detected in the Made Ground, which requires further consideration.

Guidance on the assessment of risk associated with asbestos in soils was published by CIRIA C733 in 2014. This proposed a semi-quantitative risk assessment methodology for asbestos, based on potential for inhalation of airborne fibres. As many factors affect the potential magnitude of fibre inhalation in addition to concentration, it is not practicable to derive generic screening criteria for asbestos concentrations in soil. Risk factors applicable to this site are considered below:

- No visible evidence of asbestos materials was noted in the exploratory holes, suggesting that asbestos materials are present only as very minor constituents in the soil.
- Where asbestos was identified by laboratory testing, the concentration was assessed as being less than the limit of detection (0.001%).
- Only chrysotile (white) asbestos fibres were identified. Chrysotile is the least hazardous of the three principal asbestos forms, most commonly associated with asbestos cement products.
- Although the impacted soils might be excavated and disturbed, with consequent potential for fibre release during groundworks, future disturbance is likely to be minimal due to the requirement to import a clean topsoil/subsoil growing medium (proposed 450mm) or hardstanding cover.
- The materials in which asbestos was identified were of mixed composition but included some clay content. The likelihood of asbestos fibres being released from cohesive materials is less than might be the case for loose material such as sand /silt.

Subject to regulatory approval, whilst Hydrock consider it plausible for asbestos to be present in any of the Made Ground soils, overall, the risk associated with the identified presence of asbestos is considered to be low. However, mitigation will be required to ensure risks to site users remains negligible.

7.3.4.2 Volatile organic compounds - soils

As determined in section 7.3.3.4, concentrations of VOC (chloromethane) in soils (both Made Ground and Peat) have been found in excess of the GAC in two locations in the north of the site. The maximum concentration is 0.033mg/kg, which is less than 1.75 times the GAC of 0.033mg/kg. This minor

exceedance is not considered a significant risk to human health and no further consideration is required.

7.4 Plant life risk assessment

7.4.1 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 D. 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 a US_{95} exceedance of the GAC, no pervasive chemicals of potential concern which require further assessment were found within the Made Ground. In addition, no chemicals of potential concern, based on test results that exceed the GAC, were found within the Peat.

There is no to limited subsoil or topsoil growing medium on the site and this will require import. The requirement for mitigation of risk to human health (as discussed in Section 7.3.4) will also serve to mitigate risks to plant life.

7.5 Pollution of controlled waters risk assessment

7.5.1 Risk estimation

The risks to groundwater and surface water from contaminants on site have been assessed in accordance with the Environment Agency (2006) Remedial Targets Methodology (RTM). Two leachate test suites were obtained for soil samples in the previous investigation (a Made Ground and Peat sample). A groundwater sample was also collected and tested from deeper Glaciofluvial Deposits.

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 G. This methodology involves selecting which of several alternative risk scenarios apply in this case. The assessment is presented in Table 7.4 below, with the justification for the scenarios selected explained in the following text:

- It has been confirmed that the Lower Pennine Coal Measures Secondary A Aquifer is separated from potential contaminant sources above it by greater than 10m of low-permeability Glacial Till which will act as a barrier to downward transmission of contaminants. As a result, there is not likely to be a viable pathway to groundwater in the coal measures.
- There are no active licensed groundwater abstractions within 250m of the site.
- The nearest surface water body is the River Roch located 350m northwest of the site. Due to the distance from site, there is a low risk of surface water runoff or contaminants leached from the Made Ground entering the river.
- There are no licensed surface water abstractions within 500m of the site boundary.

- The site is currently predominantly covered in soft landscaping (grass). Some of which will be removed as part of the redevelopment decreasing infiltration into the Made Ground.

Table 7.4: 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/pore water/calculation. RTM Level 2 - Groundwater. Direct comparison of surface water samples	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 D and are summarised in Table 7.5.

There are no WQT for petroleum hydrocarbons in water. Consequently, Hydrock has calculated risk-based guidelines for drinking water based on a methodology proposed by the WHO and using the tolerable daily intakes for the various TPH fractions as used in the derivation of the soil GAC. This is explained in Appendix G. The results are included in Table 7.5.

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

Table 7.5: 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							
Copper	1	Bioavailable EQS (inland) †	2	1	3	4	1
Iron	200	DWS	2	2	169.2	336	1
pH	6.50	DWS	2	1	5.43	8.30	1
	6	EQS					1
Groundwater Data							
Manganese	50	DWS	1	1	679.50		1
	123	Bioavailable EQS (inland) †	1	1			1
Ammnoniacal Nitrogen	300	EQS	1	1	970		1
Ali EC6-8	10	EQS*	1	1	140		1

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
Ali EC8-10	10	EQS*	1	1	118,498		1
	300	Hydrock DWS**					1
Ali EC10-12	10	EQS*	1	1	301,370		1
	300	Hydrock DWS**					1
Ali EC12-16	10	EQS*	1	1	376,970		1
	300	Hydrock DWS**					1
Ali EC16-35	10	EQS*	1	1	131,670		1
Aro EC10-EC12	10	EQS*	1	1	58,809		1
	90	Hydrock DWS**					1
Aro EC12-EC16	10	EQS*	1	1	148,780		1
	90	Hydrock DWS**					1
Aro EC16-EC21	10	EQS*	1	1	178,740		1
	90	Hydrock DWS**					1
Aro E21-EC35	10	EQS*	1	1	50,900		1
	90	Hydrock DWS**					1

Note: the maximum recorded value is compared with the water quality target.
* The Water Supply Regulations 1989 and the Private Water Supply Regulations 1991 both contained a prescribed concentration of 10 µg/l for 'dissolved or emulsified hydrocarbons (after extraction with petroleum ether); mineral oils'. This was removed when these Regulations were updated in 2000 (consolidated 2007) and 2009, respectively. However, 10 µg/l is used in this report as an initial screening assessment as it is frequently the preferred approach of the Environment Agency.
** Hydrock calculated DWS for petroleum hydrocarbon fractions based on WHO methodology.
† The EQS for these substances represents a bioavailable concentration, which will be a proportion of the actual dissolved concentrations in water. No site-specific bioavailability testing was able to be undertaken at the site and therefore the EQS bioavailable represents a conservative screening approach.

7.5.2 Risk evaluation

The EQS/DWS have been exceeded for a number of chemicals of potential concern in both the leachate samples (Made Ground and Peat) and groundwater sample from the Glaciofluvial Deposits.

In the Made Ground the EQS was exceeded for ammoniacal nitrogen, pH and the DWS was exceeded for iron and pH. In the Peat, EQS was slightly exceeded for copper.

In the Glaciofluvial Deposits the EQS was exceeded for manganese and ammnoniacal nitrogen, as well as the petroleum hydrocarbon fractions Aliphatic >EC8-EC10 to >EC12-EC16 and Aromatic >EC10-EC12 to >EC21-EC35. The DWS was exceeded for manganese and the petroleum hydrocarbon fractions Aliphatic >EC8-EC10 to >EC12-EC16 and Aromatic >EC10-EC12 to >EC21-EC35 (see below).

Whilst there are exceedances of the water quality targets, excluding the petroleum hydrocarbons, these are considered not to represent a significant risk of pollution of Controlled Waters for the following reasons:

- Many of the exceedances are only slight;
- Chemicals such as ammonium are likely to be related to the long-term degradation of organic materials found in the clays and silts of the Made Ground, Peat or Glacial Deposits;

- The inland waters EQSs for copper, manganese, 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; and
- The Pennine Lower Coal Measures Secondary A Aquifer is separated from the Made Ground and Peat above it by more than 10m of low-permeability clay. The River Roch, is in turn separated from the site by a distance of 350m.

There is currently no explanation for the hydrocarbon content of the groundwater sample from BH0102, as no visual or olfactory evidence of petroleum hydrocarbons, has been noted within the surrounding soils in BH102 or in any of the surrounding exploratory holes. This discovery will be subject to additional testing to rule out either cross-contamination or a laboratory reporting error.

On 13/01/2022 the monitoring well at BH102 was developed and a sample of the groundwater was collected for chemical analysis. There was no visual or olfactory evidence of contamination on the water that was purged or sampled from BH102. The chemical analysis results of the groundwater show all hydrocarbons to be below the limit of detection. The chemical analysis certificate is provided in Appendix D.

On this basis, and given that there has been no viable source of hydrocarbons identified on site it would be justified to suggest that the elevated concentrations identified in the previous investigation is a result of possible cross-contamination or a laboratory reporting error. No further consideration to petroleum hydrocarbons in groundwater is required.

7.6 Ground gases risk assessment

7.6.1 Data

It is judged from the available evidence that the gas generation potential at the site is moderate (due to the presence of Peat) and that the sensitivity of the development is low to moderate (The proposed development is for a two-storey school). Consequently, and in accordance with CIRIA C665 (Table 5.5a and 5.5b), an appropriate minimum monitoring regime is six to nine readings over three to six 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 the six readings required, including periods of falling and low atmospheric pressure.

A total of three monitoring visits were undertaken at RO01 to establish the ground gas regime within the PLCM.

7.6.2 Assessment

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

The assessment guidelines published by CIRIA are based on interpretation of the gas concentrations and the gas flow rates, amongst other variables, and are compliant with the model procedures of LCRM. The modified Wilson and Card assessment has been used by comparing the maximum gas concentrations

and gas screening values (GSV[1]) in Appendix D with the published table (CIRIA Table 8.5) and the assessment is summarised in Table 7.6. The assessment is presented in Appendix C.

Table 7.6: Ground gas risk assessment

	Min	Max	Typical [(i)]	Comment
Steady Flow Rate (l/hr)	0.10	3.70	<1	-
Methane (%)	0.10	12.70	<1	There are occasional concentrations of methane elevated above 1%. Concentrations of carbon dioxide, are frequently above 5% in the peat deposits.
Carbon Dioxide (%)	0.20	18.30	>5	
Carbon Monoxide (ppm)	1	14	<1	Peak CO was recorded at 108ppm in RO01 on one occasion. Steady CO ranged between 5ppm and 14ppm in RO01.
Hydrogen Sulphide (ppm)	1	2	<1	-
Oxygen (%)	6	21.40	>15	-
Carbon Dioxide GSV based on Maximum Values (Site) (l/hr)	0	0.44	<0.7	CS2
Methane GSV based on Maximum Values (Site) (l/hr)	0	0.02	<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 7.6, the computed GSV for carbon dioxide indicates CS2 conditions, with methane classifying as CS1. As such, given the frequently detected concentrations of carbon dioxide above 5% in the peat deposits in addition to the sensitivity of the site redevelopment as a school facility, it would be appropriate the classify the site as Characteristic Situation 2.

.

Within the PLCM flow rate and steady methane concentrations remained below the limit of detection, and steady carbon dioxide concentrations did not exceed 0.2%. Peak carbon monoxide was recorded at 108ppm in RO01 on one occasion, however the steady levels ranged between 5ppm and 14ppm. As such the computed GSV for carbon dioxide and methane indicates CS1 conditions. Peak carbon monoxide was detected at 108ppm on one occasion in the PLCM, however this is considered to be a spurious reading resulting from the groundwater level exceeding the response zone, hence the steady carbon monoxide on the same occasion falling to 7ppm.

On the basis that the computed GSV for the PLCM is CS1 and that mitigation measures are required for all new buildings commensurate with CS2 Conditions due to gassing peat deposits then no uplift from CS2 conditions are considered necessary.

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

On this basis, mitigation measures for all new buildings are required commensurate with CS2 Conditions. These are described in Section 7.10

7.6.3 Off-site risks from carbon dioxide and methane

The National Planning Policy Framework 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 unlikely to be a risk as all the buildings surrounding the site are fairly modern and are likely to have been built on similar ground conditions. This means they should have included the risk of ground gases in their design and construction.

7.7 Construction materials risk assessment

7.7.1 Water pipelines

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

The site is predominantly previously undeveloped, with a small area of brownfield (demolished housing) across the southern half of the site. However, the investigation has not detected organic contamination in exceedance of the threshold values and Hydrock believes standard pipework may be suitable for the site. However, confirmation should be sought from the water supply company at the earliest opportunity.

7.7.2 Other construction materials

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

In accordance with the British Plastics Federation Guidance (August, 2018), as the concentrations of the petroleum hydrocarbons (TPH) are above 200 mg/kg, in three samples from the northeast corner of the site (TP101, TP102 and CPT101), the pipework manufacturer should be consulted with regard the suitability of the pipework.

7.8 Contamination risks to ground workers

7.8.1 Introduction

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

Information presented in this document is provided to assist in managing the risk associated with contamination in soil and groundwater at the site but is not definitive. The Contractors are responsible

for undertaking their own assessments and assessing what risks are present and what control measures are required.

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

7.8.2 Ground Gas

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

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

7.8.3 Asbestos

Whilst no clearly identifiable ACM has been seen during the site walkover or during the ground investigation, the laboratory testing has identified trace concentrations of asbestos fibres (<0.001%) in the soils.

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

The Contractor for each stage of works must assess the risks in accordance with Regulation 6 of the Control of Asbestos Regulations 2012 (CAR2012) and if considered necessary compile a methodology in accordance with Regulation 7 of CAR2012.

It is the responsibility of the Contractor to ensure that mitigation measures are suitable and sufficient to prevent exposure to airborne asbestos so far as is reasonably practicable in accordance with Regulation 11 of CAR2012. However, the asbestos fibres detected at the site are at a very low concentration and within a soil matrix. As such, if the soils are kept damp and appropriate site hygiene measures are in place, this should assist in minimising the risk of the release of airborne fibres.

7.9 Findings of the generic contamination risk assessments

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

A summary of the Source-Pathway-Receptor (SPR) contaminant linkages for which the risks may be unacceptable and require mitigation (those that are moderate or higher) are discussed in Table 7.7.

Table 7.7 assumes the following SPR linkages which have been discounted (subject to agreement) at the risk evaluation stage are confirmed by the regulators and the warranty provider as not requiring further

consideration (mitigation). If these assumptions are not agreed during regulatory discussions, the conclusions as noted in Table 7.7 will need to be updated:

- Chloroethene (vinyl chloride) has been tested in the original investigation, all results were recorded as less than the laboratory limit of detection. It should be noted, the limit of detection is in excess of the GAC but Hydrock do not believe this poses a risk.
- Slightly elevated concentrations of Chloromethane (maximum value of 0.033mg/kg vs a GAC of 0.019mg/kg).
- The WQT for Copper, Iron, Manganese, Ammoniacal Nitrogen and pH have been exceeded. However, many of the exceedances are slight and chemicals such as Ammoniacal Nitrogen are likely to be related to the long-term degradation of organic materials found in the clays and silts of the Made Ground, Peat and Glacial Deposits. Also, the inland waters EQSs assessment for copper and manganese is conservative as it assumes 100% bioavailability. Furthermore, the Pennine Lower Coal Measures Aquifer is separated from the Made Ground and Peat above it by more than 10m of low-permeability clay. The River Roch, is in turn separated from the site by a distance of 350m. It is considered that specific remedial measures would be technically challenging, disproportionate and would yield no measurable improvement in groundwater quality.

Table 7.7: Residual risks following risk evaluation

Contaminant Linkage				Comments	
Pollutant Linkage	Sources	Pathways	Receptors	General	Mitigation
PL 1.	Asbestos fibres within the soil	Inhalation of fugitive dust.	Human health.	Asbestos fibres (<0.001%v/v of chrysotile) measured in soil samples.	Overall, the risk associated with the identified presence of asbestos is considered to be low. However, mitigation will be required to ensure risks to site users remains negligible.

Contaminant Linkage				Comments	
Pollutant Linkage	Sources	Pathways	Receptors	General	Mitigation
PL	Carbon dioxide from biodegradable matter in the Peat.	Migration through soils or groundwater to indoor air.	End users of new buildings (asphyxiation).	Characteristic Situation 2.	Mitigation required by the construction of a subfloor void and installation of suitable gas resistant membrane. To be installed by trained installer. To be validated and verified.
PL 2.	TPH in soils in the northeast of the site.	Direct contact	Plastic pipes for drains and sewers.	The Made Ground contains concentrations of petroleum hydrocarbons (TPH) above 200 mg/kg in the northeast of the site. Consultation with the pipework manufacturer regarding the suitability of the pipework. Installation of suitable pipework in the northeast of the site.	

7.10 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 7.7 (and subject to regulatory, Hydrock consider the following mitigation is required to ensure the site is suitable for use for the proposed end use. The mitigation measures include:

- The installation of a 450mm in areas of soft landscaping, comprising a subsoil beneath a topsoil thickness of between 150mm and 300mm (PL1).
- Installation of ground gas mitigation measures to comply with CS2 conditions (as described in Section 7.10.1) (PL2 and PL4).
- Consultation with the pipework manufacturer and installation of suitable pipework (PL5).

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

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 ground gas membrane installation).

7.10.1 Gas protection measures

Mitigation of the risk from ground gases needs to be undertaken in accordance with BRE 414, CIRIA 665, BS 8485:2015 +A1:2019, CIRIA C735. In accordance with BS 8485:2015 +A1:2019, the design of gas protection measures needs to be undertaken in accordance with the Characteristic Situation and the building type:

- The site is classified as Characteristic Situation 2.
- The school is classified as a type C building, as such requires 2.5 points of protection. This is illustrated in Table 7.8.

Table 7.8: Gas protection score by CS and type of building (after BS 8485:2015 +A1:2019)

Characteristic Situation	Minimum gas protection score (points)			
	High risk		Medium risk	Low risk
	Type A building	Type B building	Type C building	Type D building
1	0	0	0	0
2	3.5	3.5	2.5	1.5
3	4.5	4	3	2.5
4	6.5	5.5	4.5	3.5
5	_ (A)	6.0	5.5	4.5
6	_ (A)	_ (A)	_ (A)	6.0

A) The gas hazard is too high for this empirical method to be used to define the gas protection measures.

The final design of ground gas protection measures is to be specified by the designer (in accordance with CIRIA 665) and BS 8485:2015 +A1:2019) and the protection will need to be achieved by a combination of two or more of the following three types of protection measures:

- the structural barrier of the floor slab;
- ventilation measures; and
- gas resistant membrane.

Where design elements are required to meet certain standards to qualify for the protection points (e.g. cast *in situ* monolithic reinforced floor slab), it is up to the designer to ensure the minimum requirements of the standards are met.

Where used, gas resistant membranes should be:

- sufficiently impervious to methane and carbon dioxide;
- capable, after installation, of providing a complete barrier to the entry of the relevant gas;
- sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions;
- sufficiently strong to withstand in service stresses (e.g. due to ground settlement if placed below a floor slab);
- sufficiently strong to withstand the installation process and following construction activities until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, and dropping tools); and

- chemically resistant to degradation by other contaminants that might be present.

As preliminary guidance, Hydrock would suggest the following:

Either:

- Beam and block or pre-cast concrete floor slab (0 points);
- passive sub floor ventilation e.g. void (good performance 1.5 points); and
- 2000g gas resistant membrane (2.0 points).

Or:

- Cast *in situ* ground-bearing floor slab (with only nominal mesh reinforcement) (0.5 points);
- 2000g gas resistant membrane (2.0 points).

Other variations are possible. It is up to the designer to design and specify ground gas protection measures.

Where a gas resistant membrane is required as part of the design, all joints and penetrations are to be sealed and the installation is to be verified in accordance with CIRIA C735 (Mallet et al 2014) or it will score zero points and will not be deemed to afford any protection. This verification will involve verification by the Contractor and independent verification on a selected number of plots by Hydrock or alternative qualified independent third-party.

Whilst tape can be utilised to seal the seams Hydrock would recommend the membranes are sealed using welded seams and the use of specialist seals around penetrations (top hats etc.). The installer is to present an installation methodology and a QA/QC plan for installation to Hydrock for comment, with particular attention given to sealing the membrane.

In order to achieve the points specified for ventilation, the architect is to design passive ventilation to meet at least 'good performance', as described in Annex B of BS 8485:2015 +A1:2019.

8. WASTE AND MATERIALS MANAGEMENT

8.1 Introduction

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

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

8.2 Waste disposal

8.2.1 Principles

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

Classification is a staged process:

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

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

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

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

Topsoil and Peat

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

Greenfield Sites

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

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

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

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

Contaminated or potentially contaminated sites

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

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

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

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

8.2.2 HazWasteOnline™ assessment

As the site is brownfield, in order to inform the preliminary waste characterisation process, Hydrock has undertaken an exercise using the proprietary web-based tool HazWasteOnline™. The output of the HazWasteOnline™ assessment is provided in Appendix E and a summary of the preliminary waste classification is provided below in Section 8.2.3.

It should be noted that some of the soil samples assessed as part of the HazWasteOnline™ are classified as potentially hazardous on account of the designation 'HP3i' (with regards to petroleum hydrocarbons). However, based upon carbon banding of the TPH, the findings of the investigation and the way the petroleum hydrocarbons are distributed within the soil, it is likely that the potential for the soil being hazardous on account of HP3i can be all but discounted and it would be reasonable to assume that the result would indicate that the soil, would be non-hazardous as a result of the TPH content.

8.2.3 Preliminary waste disposal options

The site is brownfield and based on the site history and the HazWasteOnline™ assessment, if suitable segregation of different types of waste is put in place, for soils to be disposed of, it is considered that the Made Ground and underlying Peat is likely to be classified as non-hazardous waste. However, any soils containing > 0.1% asbestos or visible asbestos containing materials would be considered as hazardous.

8.2.4 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).

8.3 Materials management

8.3.1 Introduction

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

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

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

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

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

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

It should be noted that failure to comply with the requirements of the DoWCoP when re-using materials has potentially significant consequences for the waste holder. The risk is that the reused materials are still regarded as a waste that has been illegally deposited. From 1 April 2018, the scope of Landfill Tax

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

has been extended to sites operating without the appropriate environmental disposal permit, and operators of illegal waste sites will now be liable for Landfill Tax. Further information is available at: https://www.gov.uk/government/publications/landfill-tax-disposals-not-made-at-landfill-sites/landfill-tax-disposals-not-made-at-landfill-sites.

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

8.3.2 Materials management scenarios

The materials management scenarios present on site are discussed below.

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

8.3.2.1 Clean, naturally occurring materials – 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.

8.3.2.2 Made Ground and other contaminated soils

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

- a Materials Management Plan (MMP), to prevent the material being classified as a waste following reuse; or
- an exemption (for limited volumes); or
- an environmental permit, dependant on its status.

Other commonly occurring circumstances are:

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

8.3.2.3 Geotechnical improvement requirements

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

However, should processing be needed (such as screening, treatment or improvement), that would constitute a waste activity and require a mobile treatment permit. This may be as simple

as removing oversize material with an excavator bucket, to using a riddle bucket to remove hardcore to full mechanical screening.

9. UNCERTAINTIES AND LIMITATIONS

9.1 General comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of Tilbury Douglas on behalf of The Department for Education (the Client), by e-mail dated September 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 November and December 2021. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, not all potential environmental constraints or liabilities associated with the site may have been revealed.

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

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

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

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

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

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

10. RECOMMENDATIONS FOR FURTHER WORK

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

- 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 and Verification Plan (and agreement with the regulatory bodies and the warranty provider);
- production of a Materials Management Plan relating to reuse of soils at the site and import of soils to the site;
- remediation and mitigation works; and
- verification of the remediation and mitigation works.

11. REFERENCES

ALLEN, D. L., BREWERTON, L. J., COLEBY, L. M., GIBBS, B. R., LEWIS, M. A., MACDONALD, A. M., WAGSTAFF, S. J. and WILLIAMS, A.T. 1997. The physical properties of major aquifers in England and Wales. British Geological Survey Technical Report WD/97/34. 312pp. Environment Agency R and D Publication 8.

ASSOCIATION OF GROUND INVESTIGATION SPECIALISTS. 2006. Guidelines for Good Practice in Site Investigation. Issue 2. AGS, Beckenham.

ASSOCIATION OF GROUND INVESTIGATION SPECIALISTS. 2019. Waste Classification for Soils – A Practitioners' Guide. AGS, Beckenham.

ASSOCIATION OF DIRECTORS OF ENVIRONMENT, ECONOMY, PLANNING & TRANSPORT (ADEPT) AND CONSTRUCTION WASTE FORUM (CWF). August 2019. Managing Reclaimed Asphalt. Highways and Pavements. An ADEPT and Construction Waste Forum Guidance Note.

BRE. 2016. Soakaway design. BRE DG 365. BRE, Garston.

BRITISH PLASTIC FEDERATION. August 2018. 'Designing Drains and Sewers for Brownfield Sites. Guidance Notes'. BPF Pipes Group (https://www.bpfpipesgroup.com/media/29155/Designing-drains-and-sewers-for-brownfield-sites.pdf)

BRITISH STANDARDS INSTITUTION. 2011. Code of Practice for Investigation of Potentially Contaminated sites. BS 10175 Incorporating Amendment No. 2:2017. BSI, London.

BRITISH STANDARDS INSTITUTION. 2004+A1 2013. Eurocode 7 – Geotechnical design - Part 1: General rules. BS EN 1997-1+A1. Incorporating Corrigendum February 2009. BSI, London.

BRITISH STANDARDS INSTITUTION. 2015. Specification for topsoil. BS 3882. BSI, London.

BRITISH STANDARDS INSTITUTION. 2015. Code of practice for ground investigations. BS 5930. BSI, London.

BRITISH STANDARDS INSTITUTION. 2015+A1 2019. Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings. BS 8485:2015 +A1:2019. BSI, London.

CARD, G., WILSON, S. and MORTIMER, S. 2012. A pragmatic approach to ground gas risk assessment. CL:AIRE Research Bulletin RB17. CL:AIRE, London.

CIEH and CL:AIRE. May 2008. Guidance on comparing soil contamination data with a critical concentration. Chartered Institute of Environmental Health and Contaminated Land: Applications in Real Environments, London.

CLAYTON, C. R. I. 2001. Managing Geotechnical Risk. Improving productivity in UK building and construction. Thomas Telford, London.

CL:AIRE. March 2011. The Definition of Waste: Development Industry Code of Practice, Version 2. Contaminated Land: Applications in the Real Environment (CL:AIRE), London.

CL:AIRE. March 2016. CAR-SOIL™ Control of Asbestos Regulations 2012 - Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials: Industry guidance. Contaminated Land: Applications in the Real Environment (CL:AIRE), London.

CONCRETE SOCIETY, THE. 2013. Concrete industrial ground floors. A guide to design and construction. Technical Report 34 (4th Ed.). The Concrete Society, Camberley.

DCLG. February 2019. National Planning Policy Framework. DCLG, London.

DEPARTMENT FOR ENVIRONMENT FOOD AND RURAL AFFAIRS (DEFRA). 2005. 'Landfill (England and Wales) (Amendment) Regulations', (with reference to previous iterations of the regulations).

DEFRA. March 2014. SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document. Defra, London.

ENVIRONMENT AGENCY. June 2001. National Groundwater and Contaminated Land Centre Report NC/99/73: Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention. The Environment Agency, Bristol.

ENVIRONMENT AGENCY. 2006. Remedial Targets Methodology. Hydrogeological Risk Assessment for Land Contamination. The Environment Agency, Bristol.

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

ENVIRONMENT AGENCY. November 2010. Environment Agency Regulator Position Statement 075 (EARPS075). The Environment Agency.

ENVIRONMENT AGENCY. November 2011. Treatment of waste for landfill. Report – GEHO1111BVDF-E-E 913_11, Version 2 The Environment Agency. http://publications.environment-agency.gov.uk/pdf/GEHO1111BVDF-E-E.pdf

ENVIRONMENT AGENCY. 2018. Waste classification. Guidance on the classification and assessment of waste (1st Edition v1.1) Technical Guidance WM3. The Environment Agency.

ENVIRONMENT AGENCY. 2019. Land Contamination: Risk Management (LCRM). The Environment Agency.

HATANAKA, M, UCHIDA, A, KAKURAI, M, and AOKI, M. 1980. A consideration on the relationship between SPT N-value and internal friction angle of sandy soils. Journal of Structural and Construction Engineering (Transactions of AIJ). 63. 125-129. 10.3130/aijs.63.125_2.

HEALTH and SAFETY EXECUTIVE. December 2005. Construction Information Sheet 47: Inspections and Reports (CIS 47 (Rev 1)). HSE.

HEALTH and SAFETY EXECUTIVE. December 2005. EH40/2005 Workplace Exposure Limits (2nd edition 2011,). HSE.

HEALTH and SAFETY EXECUTIVE. 2014. HSG47 - Avoiding danger from underground services (Third edition). HSE.

HIGHWAYS AGENCY. 2009. Design Guidance for Road Pavement Foundations (Draft HD25). Interim Advice Note 73/06. Rev 1. Highway Agency, London.

JOHNSON, R. 2001. Protective measures for housing on gas contaminated land. Building Research Establishment Report BR 414. BRE, Garston.

JONES, H. K., MORRIS, B. L., CHENEY, C. S., BREWERTON, L. J., MERRIN, P. D., LEWIS, M. A., MACDONALD, A. M., COLEBY, L. M., TALBOT, J. C., MCKENZIE, A. A., BIRD, M. J., CUNNINGHAM, J. and ROBINSON, V. K. 2000. The physical properties of minor aquifers in England and Wales. British Geological Survey Technical Report WD/00/04. 234pp. Environment Agency R and D Publication 68.

MALLETT, H., COX, L., WILSON, S., and CORBAN, M. 2014. Good practice on the testing and verification of protection systems for buildings against hazardous ground gases. CIRIA Report C735. Contaminated Land: Applications in Real Environments, London.

MILES, J. C. H., APPLETON, J. D., REES, D. M., GREEN, B. M. R., ADLAM. K. A. M. and MYRES. A. H. 2007. Indicative Atlas of Radon in England and Wales. Health Protection Agency and British Geological Survey. Report HPA-RPD-033.

MINISTRY OF HOUSING, COMMUNITIES and LOCAL GOVERNMENT. 12 June 2014. Land affected by contamination. Planning Policy Guidance Reference ID: 33-007-20140612.

MINISTRY OF HOUSING, COMMUNITIES and LOCAL GOVERNMENT (MHCLG). Internet published Planning practice guidance https://www.gov.uk/government/collections/planning-practice-guidance. MHCLG. London

NATHANAIL P., JONES A., OGDEN, R., AND ROBERTSON A. 2014. Asbestos in soil and made ground: a guide to understanding and managing risks. CIRIA Report C733 Contaminated Land: Applications in Real Environments, London.

RAWLINS, B. G., McGRATH, S. P., SCHEIB, A. J., CAVE, N., LISTER, T. R., INGHAM, M., GOWING, C. and CARTER, S. 2012 .The advanced geochemical atlas of England and Wales. British Geological Survey, Keyworth.

SCIVYER, C. 2015. Radon: Guidance on protective measures for new buildings. Building Research Establishment Report BR 211. BRE, Garston.

SHAND, P., EDMUNDS, W.M., LAWRENCE, A.R., SMEDLEY, PAULINE, BURKE, S. 2007. The natural (baseline) quality of groundwater in England and Wales. Environment Agency, 72pp. (RR/07/006)

SoBRA, 2017. Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater. 90pp. Version 1.0.

STONE, K., MURRAY, A., COOKE, S., FORAN, J. and GOODERHAM, L. 2009. Unexploded ordnance (UXO), a guide to the construction industry. CIRIA Report C681. Contaminated Land: Applications in Real Environments, London.

WASTE AND RESOURCES ACTION PROGRAMME (WRAP). October 2013. Quality Protocol. Aggregates from inert waste. End of waste criteria for the production of aggregates from inert waste.

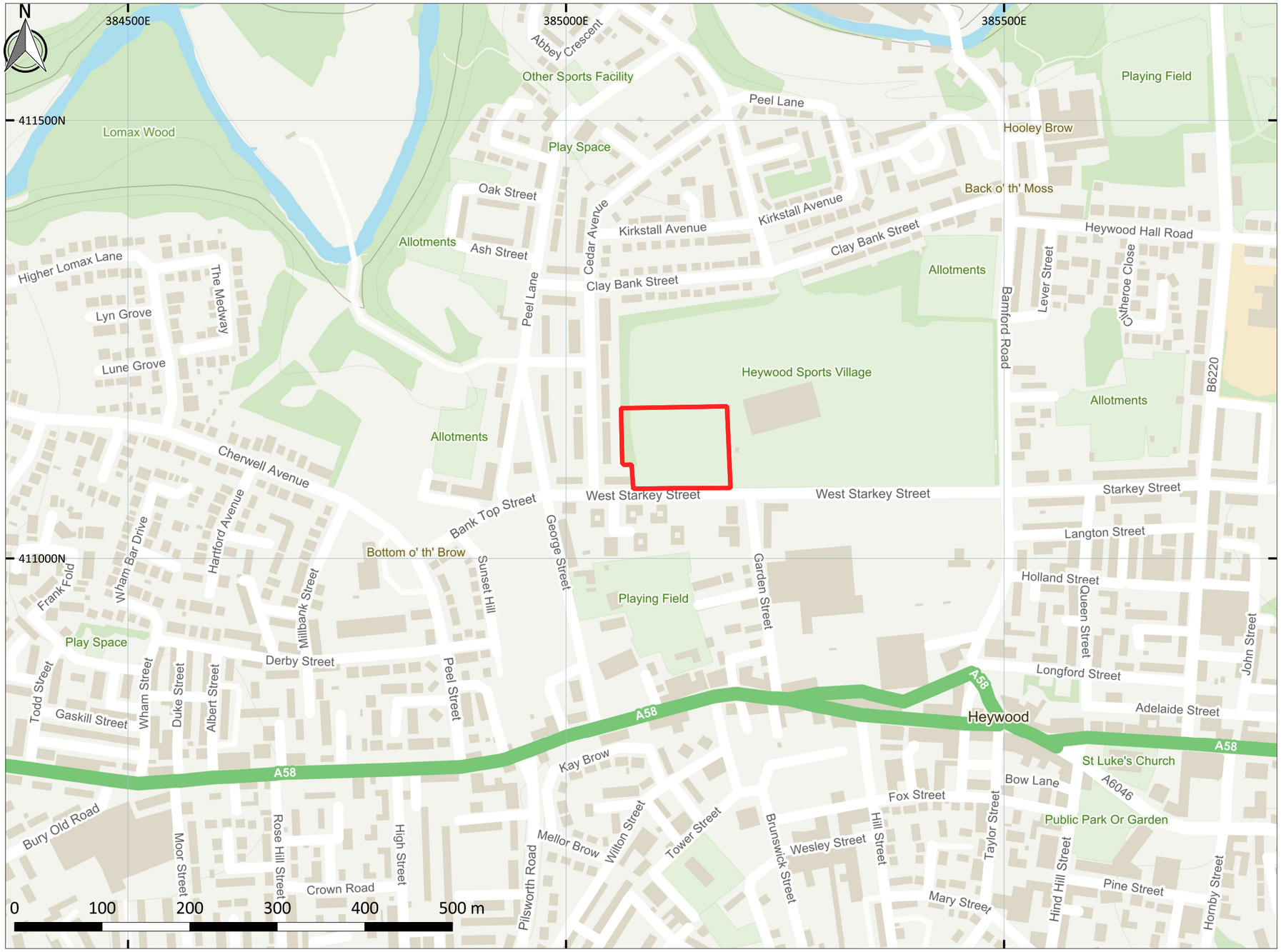
WATER UK HBF. January 2014. Contaminated Land Assessment Guidance. Water UK and the Home Builders Federation.

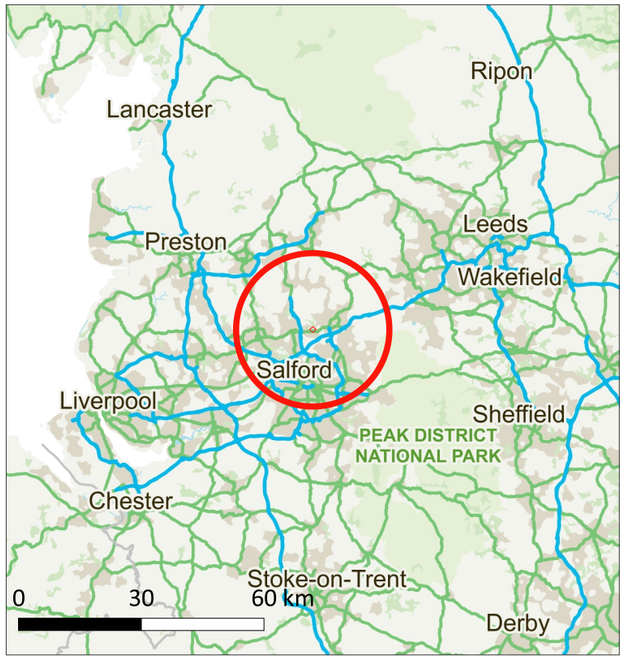
WFD-UKTAG. July 2014. UKTAG River and Lake Assessment Method, Specific Pollutants (Metals), Metal Bioavailability Assessment Tool (M-BAT). Water Framework Directive – United Kingdom Technical Advisory Group. Stirling.

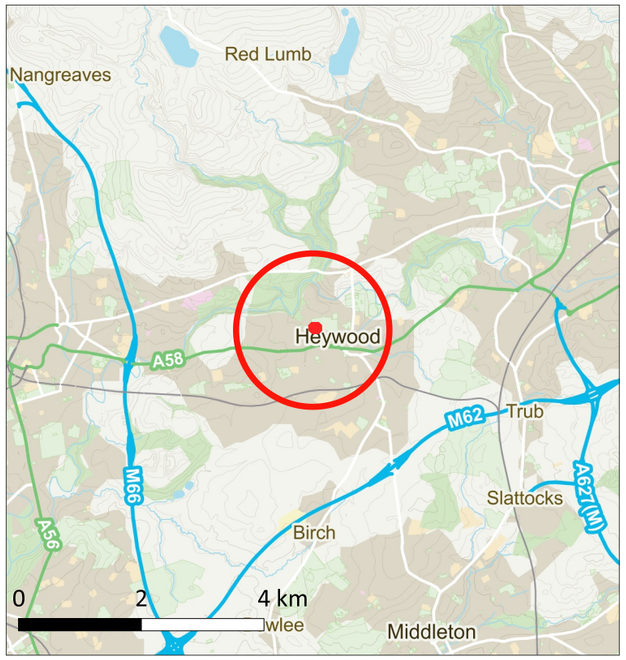
WILSON, S., OLIVER, S., MALLETT, H., HUTCHINGS, H. and CARD, G. 2007. Assessing risks posed by hazardous ground gases to buildings. CIRIA Report C665. Contaminated Land: Applications in Real Environments, London.

WILSON S., ABBOT S., MALLETT H. 2014. Guidance on the use of plastic membranes as VOC vapour barriers. CIRIA Report C748 Contaminated Land: Applications in Real Environments, London.

Appendix A Drawings







Contains Ordnance Survey data © Crown copyright and database right (2020)

KEY PLAN

Site Boundary

NOTES

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

REVISIONS

REV.	DRAWN BY INITIALS	CHECKED BY INITIALS	DATE	REVISION NOTES/COMMENTS
P01	GE	JB	27/10/21	First issue

Hydrock

TITLE
SITE LOCATION PLAN

HYDROCK PROJECT NO.
C-19522

SCALE @ A3
1:5,000

CLIENT
Tilbury Douglas

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

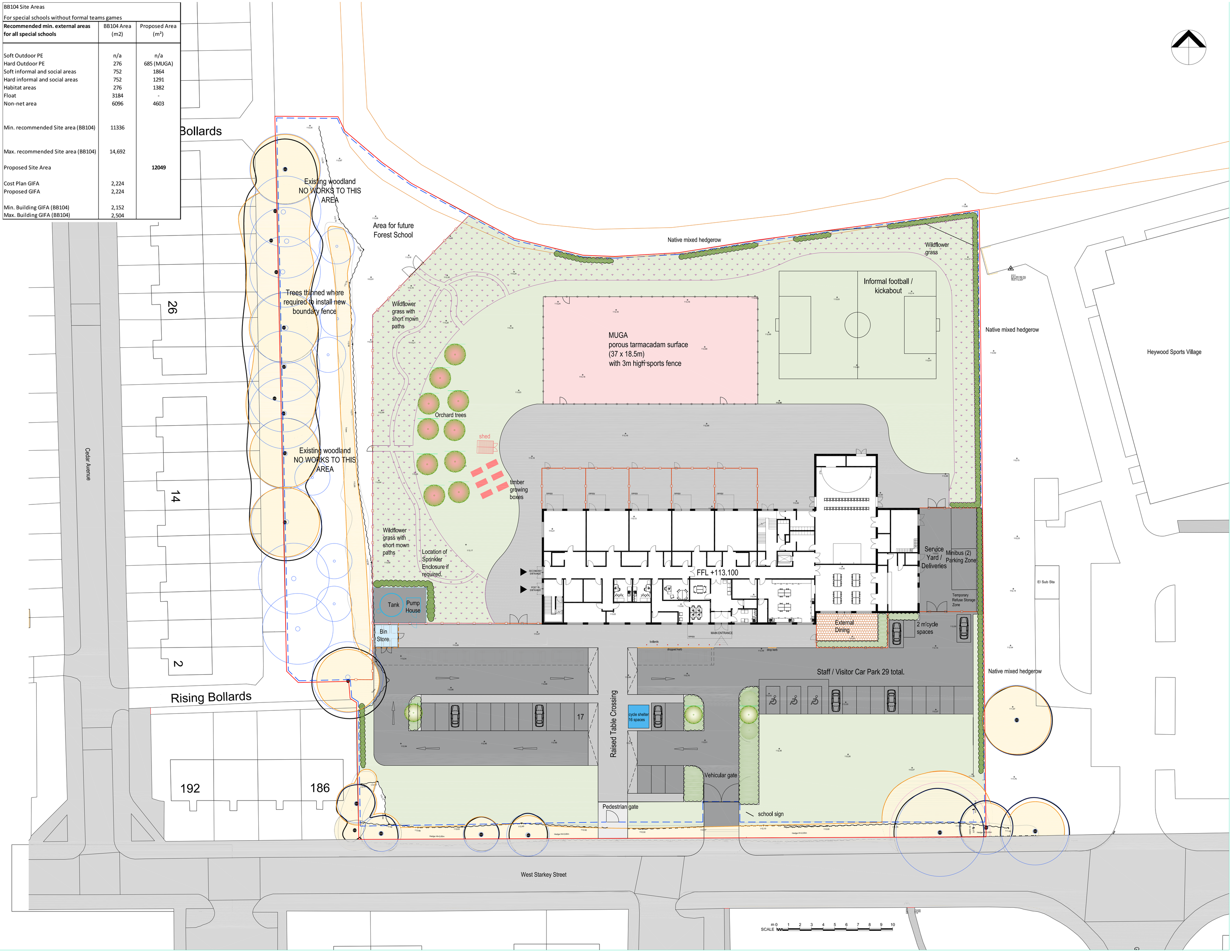
STATUS
S2

PROJECT
Rochdale SEND - Passivhaus

DRAWING NO.
19522-HYD-XX-XX-GE-DR-1001

REVISION
P01

BB104 Site Areas		
For special schools without formal teams games		
Recommended min. external areas for all special schools	BB104 Area (m2)	Proposed Area (m^2)
Soft Outdoor PE	n/a	n/a
Hard Outdoor PE	276	685 (MUGA)
Soft informal and social areas	752	1864
Hard informal and social areas	752	1291
Habitat areas	276	1382
Float	3184	-
Non-net area	6096	4603
Min. recommended Site area (BB104)	11336	
Max. recommended Site area (BB104)	14,692	
Proposed Site Area		**12049**
Cost Plan GIFA	2,224	
Proposed GIFA	2,224	
Min. Building GIFA (BB104)	2,152	
Max. Building GIFA (BB104)	2,504	



NOTES

Copyright; All rights reserved. This drawing must not be reproduced without permission. This drawing must not be scaled. Dimensions are in millimetres unless specified.

Rev	Date	Notes	By	Chk
P0	Sept 21	First Issue	NH	AS
P1	08/10/21	Developed Plan	NH	AS
P2	08/10/21	Developed Plan	NH	AS
P3	15/10/21	PCSA Issue	NH	AS
P4	03/12/21	Planning Core & TO Comments Incorporated	HTP	AS

KEY

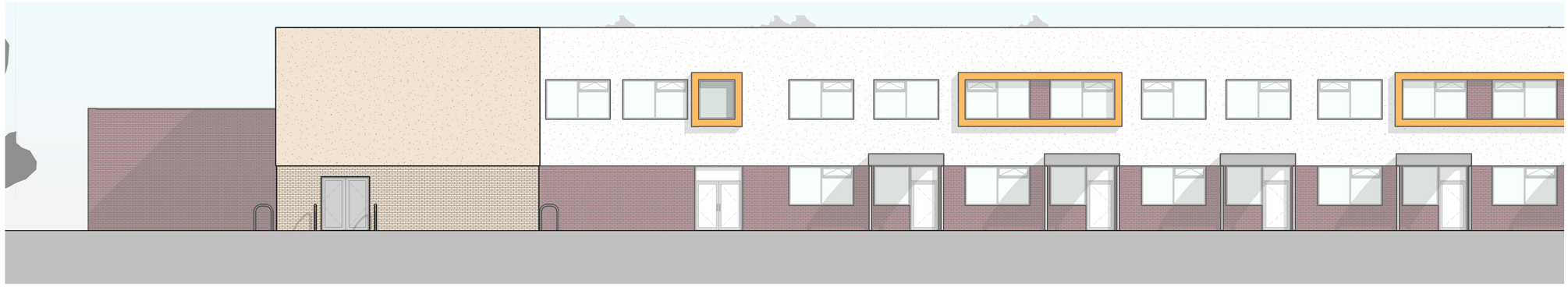
- Vehicular grade Asphalt Concrete
- Pedestrian grade macadam
- Multi Use Games Area macadam
- Existing trees retained and protected during construction
- Root Protection Areas
- New tree planting
- Amenity grass over 150mm depth topsoil
- Species rich meadow grassland over 150mm depth low fertility topsoil
- Ornamental shrub planting into 350mm depth topsoil
- Existing woodland retained
- Native species hedge mix into 350mm depth topsoil
- 2.4m high Paladin style steel weld mesh fencing
- 2m high Paladin style steel weld mesh fencing
- 1.2m high steel fencing - colour black. NBS Q40, Cl. 140B
- 1.8m High timber/composite hit and miss vertical pale fencing.
- 112.14 Existing levels
- Items under budget review
- Red line site boundary

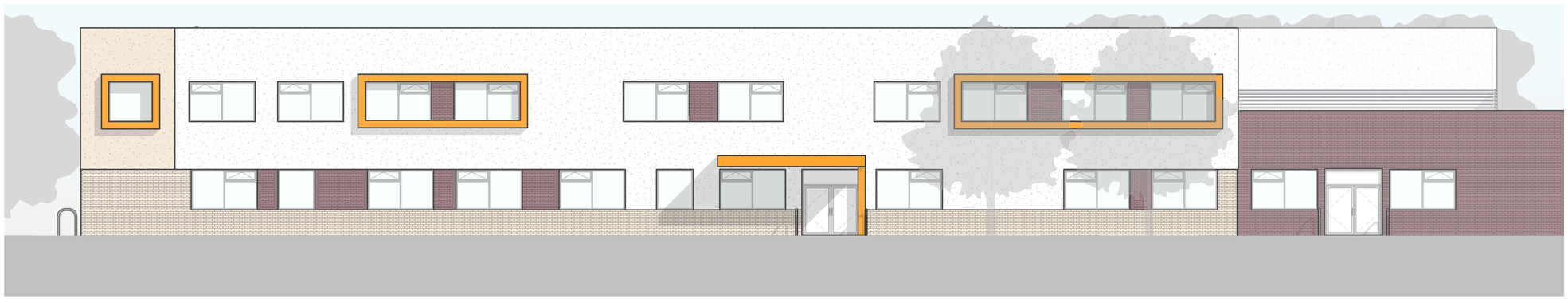
elliswilliams

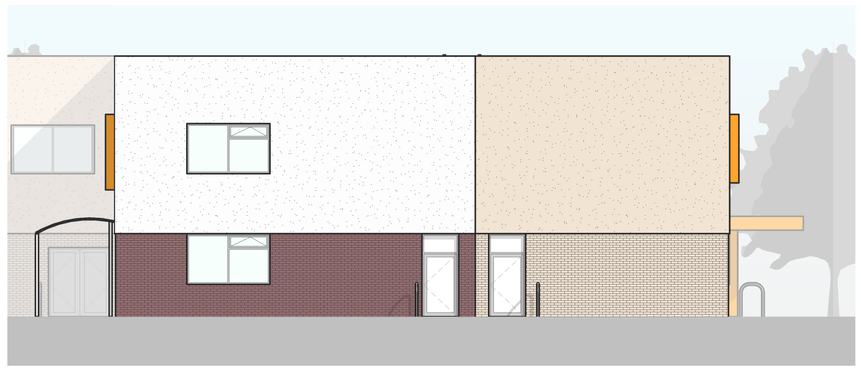
Project Number: 2718
Project Name: Rochdale SEND

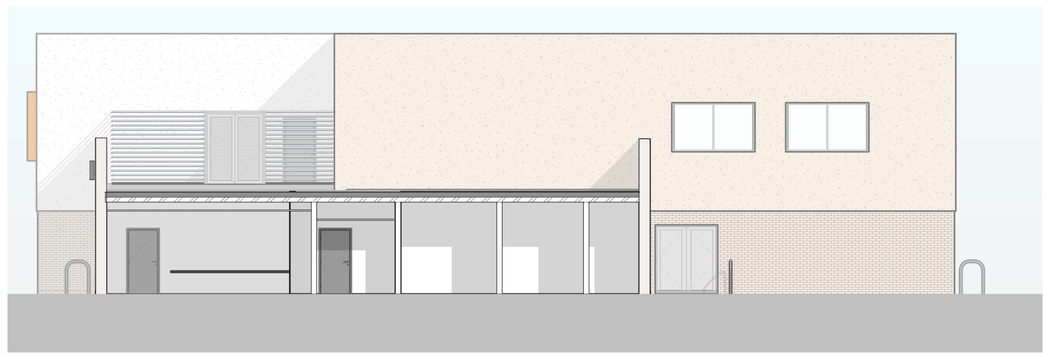
Drawing Status: S3
Drawing Number: **RSC- EWA- ZZ- ZZ- DR- L- 79001**
Drawing Name: Landscape Masterplan
Date: 10.10.21 Rev: P4
Drawn By: NH Scale: 1:100 @ A0

Wellfield Chester Road Preston Brook WA7 3BA
T: 01928 752200 E: info@ewa.co.uk W: ewa.co.uk



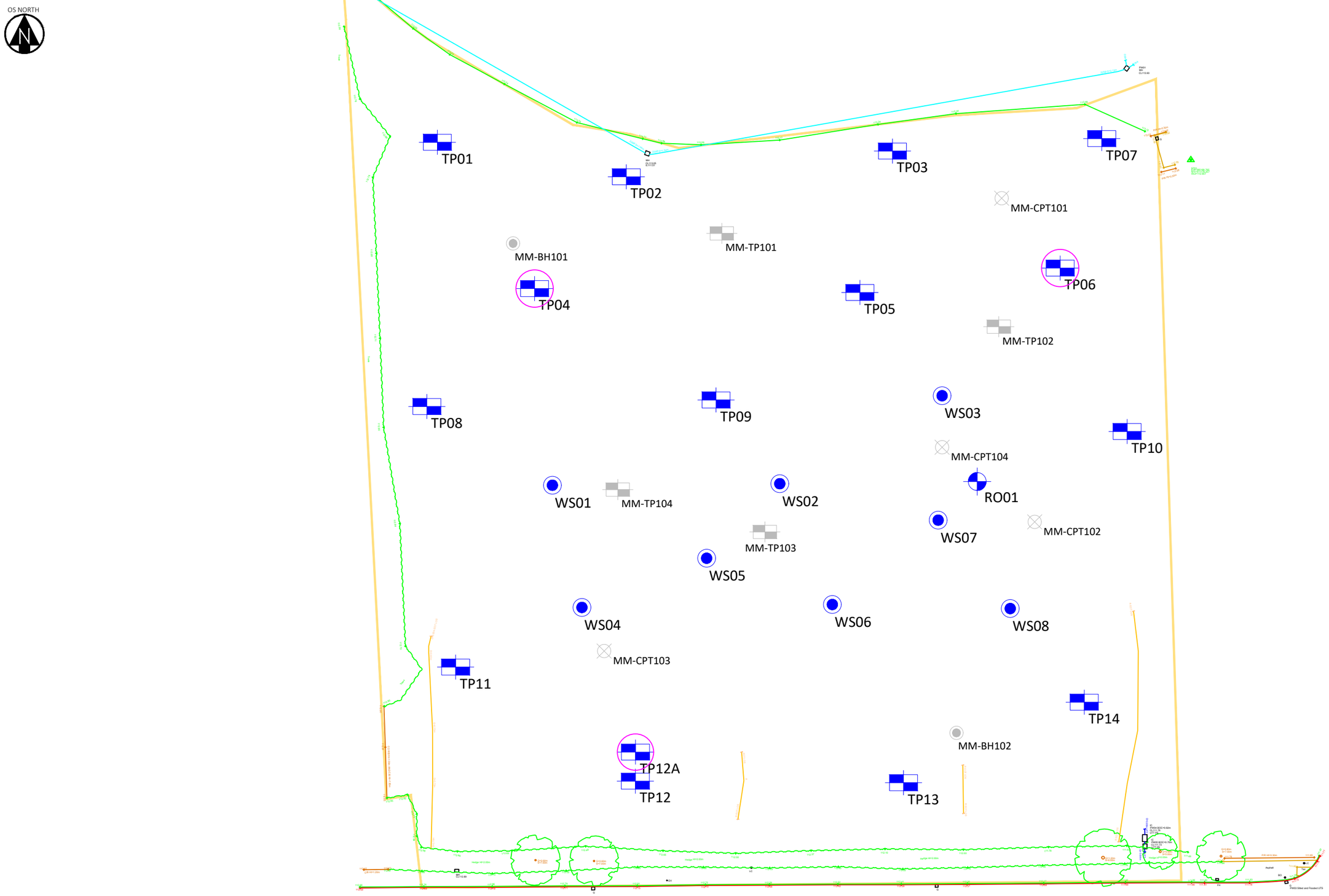






Appendix B Exploratory Hole Location Plan, Exploratory Hole Logs and Photographs

Exploratory Hole Location Plan



KEY

- ROXX Hydrock Rotary Open Hole
- WSXX Hydrock Window Sampler Borehole
- TPXX Hydrock Trial Pit
- TPWXX Hydrock Trial Pit and Soakaway Test
- MM-CPXX Mott Macdonald 2020 Cable Percussive Borehole
- MM-CPTXX Mott Macdonald 2020 Cone Penetration Test
- MM-TPXX Mott Macdonald 2020 Trial Pit

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:
   - 40Seven, November 2019, Topographical and Underground Utility Survey, ref. EHP; and
   - Mott Macdonald, Proposed Layout - Site Option 03a
4. Hole locations are provisional and may be subject to change due site constraints.

REV.	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P03	Update to include RO01					
	JB	12/07/22	AC	12/07/22	AC	12/07/22
P02	Update to include soakaway locations					
	WS	15/12/21	AC	15/12/21	AC	15/12/21
P01	FIRST ISSUE					
	JB	14/10/21	AC	14/10/21	AC	14/10/21

Hydrock

CLIENT
TILBURY DOUGLAS

PROJECT
ROCHDALE SEND-PASSIVHAUS

TITLE
EXPLORATORY HOLE LOCATION PLAN

HYDROCK PROJECT NO.	SCALE @ A3	
C-19522	NTS	
PURPOSE OF ISSUE		STATUS
SUITABLE FOR INFORMATION		S2
DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)		REVISION
19522-HYD-XX-XX-DR-GE-0002		P03

Exploratory Hole Logs

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP01 Page No. 1 of 1

Method: Trial Pit	Date(s): 03/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385083.86, 411180.78	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 113.09m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.15	ES			Black to dark greyish brown very clayey slightly gravelly fine to coarse SAND with rootlets and low boulder content of concrete. Gravel is fine to coarse, angular to subrounded of brick, concrete and quartzite. (MADE GROUND)	0.40	(0.40)	112.69	
				Stiff brownish grey mottled brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse, angular to subrounded of brick and quartzite. (MADE GROUND)	0.60	(0.20)	112.49	
				Dark greyish brown to black clayey slightly gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of brick and concrete. (MADE GROUND)	0.80	(0.20)	112.29	
				Plastic black clayey fibrous PEAT with wood and slight organic odour. (PEAT)	0.95	(0.15)	112.14	
				Firm black and brown fibrous PEAT with wood fragments and a strong humic odour. (PEAT)	1.20	(0.25)	111.89	
				Soft light grey very sandy CLAY with organic matter. (GLACIAL TILL)	1.50	(0.30)	111.59	
				Soft grey mottled brown sandy slightly gravelly CLAY with relict rootlets. Gravel is fine to coarse, angular to subrounded of mudstone and sandstone. (GLACIAL TILL) *... At 2.65m bgl: Becoming very sandy.*	2.90	(1.40)	110.19	
				Base of Excavation at 2.90m				

General Remarks:
1) Trial pit dug from ground level to 2.90m bgl. 2) No visual evidence of contamination. 3) Slight groundwater seepage at 1.20m bgl. 4) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP02 Page No. 1 of 1

Method: Trial Pit	Date(s): 03/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385110.04, 411175.75	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 113.22m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft dark brown to black very sandy gravelly CLAY with rootlets and a low cobble content of brick tile. Gravel is fine to coarse, angular to subrounded of glass, brick, concrete, wood. (MADE GROUND)	0.40	(0.40)	112.82	
				Firm brown to dark brown very sandy gravelly CLAY with rootlets. Gravel is fine to coarse, angular to subrounded of glass, brick, concrete, wood and a low cobble content of brick tile. (MADE GROUND)	0.70	(0.30)	112.52	
				Plastic black to dark brown sandy clayey fibrous PEAT with wood fragments and a mild humic odour. (PEAT)	1.25	(0.55)	111.97	
				Very soft brownish light grey very sandy slightly gravelly CLAY with relict rootlets. Gravel is fine to coarse, subangular to rounded of sandstone and mudstone. (GLACIAL TILL)	1.50	(0.25)	111.72	
				Soft grey and brownish grey sandy slightly gravelly CLAY with relict rootlets and a low cobble content of sandstone. Gravel is fine to coarse, subangular to rounded of sandstone and mudstone. (GLACIAL TILL) *... Between 2.50m - 2.70m bgl: Becoming very sandy.*	3.00	(1.50)	110.22	
				Base of Excavation at 3.00m				

General Remarks:
1) Trial pit dug from ground level to 3.00m bgl. 2) No visual evidence of contamination. 3) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP03 Page No. 1 of 1	
Method: Trial Pit	Date(s): 03/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385147.02, 411179.53	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 113.14m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30	ES			Dark brown to black very clayey slightly gravelly fine to coarse SAND with rootlets. Gravel is fine to coarse, angular to subrounded of concrete and rare plastic. (MADE GROUND)	0.50	(0.50)	112.64	
				Plastic black sandy clayey fibrous PEAT with wood fragments and mild humic odour. (PEAT) *... Between 0.80m - 1.70m bgl: Peat become brown with large cobble size pieces of wood and strong humic odour.*	1.70	(1.20)	111.44	
				Soft light grey very sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone. (GLACIAL TILL)	1.85	(0.15)	111.29	
				Soft grey and brownish grey sandy slightly gravelly CLAY with relict rootlets. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone. (GLACIAL TILL)	2.95	(1.10)	110.19	
				Base of Excavation at 2.95m				

General Remarks:
1) Trial pit dug from ground level to 2.95m bgl. 2) No visual evidence of contamination. 3) Slight groundwater seepage at 0.80m bgl. 4) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP04 Page No. 1 of 1

Method: Trial Pit	Date(s): 04/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385097.29, 411160.30	Stability: Stable.	Dimensions: 1.50m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 113.16m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Black to dark brown very clayey fine to coarse SAND with rootlets. (MADE GROUND)	0.30	(0.30)	112.86	
				Black gravelly clayey fine to coarse SAND with a medium cobble content of brick and sandstone. Gravel is fine to coarse, angular to subrounded of sandstone, brick, concrete, quartzite and rare metals. (MADE GROUND)	0.80	(0.50)	112.36	
				Plastic brown and black sandy clayey fibrous PEAT with wood fragments and mild humic odour. (PEAT)	1.30	(0.50)	111.86	
				Soft light grey very sandy gravelly CLAY. Gravel is fine to coarse, subangular to rounded of sandstone and mudstone. (GLACIAL TILL) *... At 1.65m bgl: Becoming grey mottled brown.*	2.20	(0.90)	110.96	
				Base of Excavation at 2.20m				

General Remarks:
1) Trial pit dug from ground level to 2.20m bgl. 2) No visual evidence of contamination. 3) Trial pit dug 2.00m north of original position. 4) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP05 Page No. 1 of 1

Method: Trial Pit	Date(s): 04/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385142.70, 411159.88	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 112.88m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.15	ES			Black to dark brown very clayey slightly gravelly fine to coarse SAND with rootlets. Gravel is fine to coarse, subangular to subrounded of quartzite. (MADE GROUND)	0.25	(0.25)	112.63	
				Soft black very sandy gravelly CLAY. Gravel is fine to coarse, angular to subrounded of concrete, brick and quartzite. (MADE GROUND) *... At 0.50m bgl: Land drain encountered in trial pit wall.*	0.60	(0.35)	112.28	
				Plastic slightly sandy gravelly clayey fibrous PEAT with wood fragments and strong humic odour. (PEAT)	1.70	(1.10)	111.18	
				Soft grey very sandy CLAY with occasional organic matter. (GLACIAL TILL)	1.90	(0.20)	110.98	
				Soft grey very sandy gravelly CLAY. Gravel is fine to coarse, subangular to rounded of sandstone and mudstone. (GLACIAL TILL)	3.00	(1.10)	109.88	
				Base of Excavation at 3.00m				

General Remarks:
1) Trial pit dug from ground level to 3.40m bgl. 2) No visual evidence of contamination. 3) Land drain encountered in pit wall at 0.50m bgl. 4) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP06 Page No. 1 of 1

Method: Trial Pit	Date(s): 04/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385170.64, 411163.09	Stability: Stable.	Dimensions: 1.50m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 112.89m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Black very clayey fine to coarse SAND with rootlets. (MADE GROUND)	0.25	(0.25)	112.64	
				Black clayey slightly gravelly fine to coarse SAND. Gravel is fine to coarse, subangular to subrounded of brick, concrete and wood. (MADE GROUND)	0.60	(0.35)	112.29	
				Plastic to spongy black and brown clayey slightly sandy fibrous PEAT with wood fragments, occasional branches and a strong humic odour. (PEAT)	2.40	(1.80)	110.49	
				Very soft grey very sandy slightly gravelly CLAY with relict rootlets. Gravel is fine to coarse, subangular to rounded of mudstone and sandstone. (GLACIAL TILL)	3.40	(1.00)	109.49	
				Base of Excavation at 3.40m				

General Remarks:
1) Trial pit dug from ground level to 3.40m bgl. 2) No visual evidence of contamination. 3) Slight groundwater seepage at 1.30m bgl. 4) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP07 Page No. 1 of 1

Method: Trial Pit	Date(s): 03/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385176.44, 411181.30	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 113.29m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Black very clayey slightly gravelly fine to coarse SAND with rootlets. Gravel is fine to coarse, angular to subrounded of concrete, brick and quartzite. (MADE GROUND)	0.45	(0.45)	112.84	
				Firm black sandy fibrous PEAT with rootlets. (PEAT)	1.00	(0.55)	112.29	
				Plastic brown and black slightly clayey fibrous PEAT with cobble sized wood fragments and a strong humic odour. (PEAT)	2.20	(1.20)	111.09	
				Soft light grey sandy slightly gravelly CLAY with organic matter. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone. (GLACIAL TILL)	2.40	(0.20)	110.89	
				Soft grey sandy slightly gravelly CLAY with relict rootlets. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone. (GLACIAL TILL)	3.00	(0.60)	110.29	
				Base of Excavation at 3.00m				

General Remarks:
1) Trial pit dug from ground level to 3.00m bgl. 2) No visual evidence of contamination. 3) Slight groundwater seepage at 1.00m bgl. 4) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP08 Page No. 1 of 1	
Method: Trial Pit	Date(s): 03/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385082.29, 411143.94	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 113.00m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Black clayey fine to coarse SAND with rootlets. (MADE GROUND)	0.20	(0.20)	112.80	
				Dark greyish brown to black very clayey fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of brick, concrete and sandstone. (MADE GROUND)	0.95	(0.75)	112.05	
				Plastic black becoming black and dark brown clayey gravelly fibrous PEAT with wood and strong humic odour. (PEAT)	1.50	(0.55)	111.50	
				Very soft light grey very sandy CLAY with relict rootlets. (GLACIAL TILL)	1.70	(0.20)	111.30	
				Soft grey mottled greyish brown sandy slightly gravelly CLAY with a low cobble content of sandstone. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone. (GLACIAL TILL)	3.00	(1.30)	110.00	
				Base of Excavation at 3.00m				

General Remarks:
1) Trial pit dug from ground level to 3.00m bgl. 2) No visual evidence of contamination. 3) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP09 Page No. 1 of 1

Method: Trial Pit	Date(s): 04/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385122.73, 411144.99	Stability: Stable.	Dimensions: 2.00m × 0.60m
Hydrock Project No: C-19522	Ground Level: 113.18m OD	Plant: JCB3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Dark brown to black very clayey fine to coarse SAND with rootlets. (MADE GROUND)	0.15	(0.15)	113.03	
				Soft dark brown to black very sandy gravelly CLAY to a very clayey gravelly fine to coarse sand with a medium cobble content of brick and sandstone and occasional small 0.1m x 0.1m pockets of peat. Gravel is fine to coarse angular to subrounded of brick, sandstone, concrete and occasional ceramics. (MADE GROUND) *... At 0.90m bgl: Plastic pipe encountered, trial pit extended to south.*	1.10	(0.95)	112.08	
				Plastic to spongy black to dark brown slightly sandy fibrous PEAT with wood fragments and a strong humic odour. (PEAT)	1.40	(0.30)	111.78	
				Very soft brownish light grey very sandy CLAY. (GLACIAL TILL)	1.70	(0.30)	111.48	
				Soft to firm grey sandy slightly gravelly CLAY with a low cobble content of sandstone and mudstone. Gravel is fine to coarse, subangular to subrounded of mudstone. (GLACIAL TILL)	3.00	(1.30)	110.18	
				Base of Excavation at 3.00m				

General Remarks:
1) Trial pit dug from ground level to 3.00m bgl. 2) No visual evidence of contamination. 3) Plastic pipe encountered at 0.90m bgl, trial pit extended to the south. 4) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP10 Page No. 1 of 1

Method: Trial Pit	Date(s): 03/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385180.04, 411140.45	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 112.61m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Dark brown to black clayey fine to coarse SAND with rootlets. (MADE GROUND)	0.40	(0.40)	112.21	
				Soft black very sandy slightly gravelly organic CLAY. Gravel is fine to coarse angular to subrounded of brick concrete and wood. (MADE GROUND)	0.70	(0.30)	111.91	
				Spongy black sandy fibrous PEAT with wood fragments and a strong humic odour. (PEAT)	1.80	(1.10)	110.81	
				Plastic to spongy black and brown clayey sandy fibrous PEAT, with wood fragments and a strong humic odour. (PEAT)	3.00	(1.20)	109.61	
				Very soft grey silty CLAY with organic matter and a mild humic odour. (GLACIAL TILL)	3.10	(0.10)	109.51	
				Base of Excavation at 3.10m				

General Remarks:
1) Trial pit dug from ground level to 3.10m bgl. 2) No visual evidence of contamination. 3) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP11 Page No. 1 of 1

Method: Trial Pit	Date(s): 03/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385086.35, 411107.76	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 113.06m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.50	ES			Black to dark brown clayey gravelly fine to coarse SAND with rootlets and a medium cobble content of brick, sandstone, concrete and clay pipe fragments. Gravel is fine to coarse, angular to subrounded of brick, glass, ceramics, clay pipe fragments, concrete and rare fabrics. (MADE GROUND)	0.60	(0.60)	112.46	
				Plastic to firm black and dark brown sandy clayey fibrous PEAT with a mild humic odour. (PEAT)	0.90	(0.30)	112.16	
				Soft brownish grey very sandy slightly organic CLAY with relict rootlets. (GLACIAL TILL)	1.10	(0.20)	111.96	
				Very soft to soft light grey very sandy slightly gravelly CLAY with relict rootlets. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone. (GLACIAL TILL) *... At 1.30m bgl: Becoming grey mottled brown with no relict rootlets.*	2.90	(1.80)	110.16	
				Base of Excavation at 2.90m				

General Remarks:
1) Trial pit dug from ground level to 2.90m bgl. 2) No visual evidence of contamination. 3) Slight groundwater seepage at 0.90m bgl. 4) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP12 Page No. 1 of 1	
Method: Trial Pit	Date(s): 03/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385111.50, 411092.11	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 112.88m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft black very sandy CLAY with rootlets. (MADE GROUND)	0.20	(0.20)	112.68	
				Dark brown to black very clayey gravelly fine to coarse SAND with medium cobble content of clay pipe fragments, sandstone and brick. Gravel is fine to coarse, angular to subrounded of brick concrete, sandstone, glass and wood. (MADE GROUND)	0.60	(0.40)	112.28	
				Plastic black clayey slightly sandy fibrous PEAT with wood fragments and mild to strong humic odour. (PEAT)	1.20	(0.60)	111.68	
1.30	ES			Soft greyish brown very sandy organic CLAY. (GLACIAL TILL)	1.80	(0.60)	111.08	
				Very soft to soft light grey sandy slightly gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of mudstone and sandstone. (GLACIAL TILL) *... Between 1.80m - 2.20m bgl: occasional relict rootlets.*	2.80	(1.00)	110.08	
				Base of Excavation at 2.80m				

General Remarks:
1) Trial pit dug from ground level to 2.80m bgl. 2) No visual evidence of contamination. 3) Slight groundwater seepage at 1.20m bgl. 4) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP12A Page No. 1 of 1

Method: Trial Pit	Date(s): 04/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385111.36, 411095.82	Stability: Stable.	Dimensions: 1.60m × 0.60m
Hydrock Project No: C-19522	Ground Level: 112.88m OD	Plant: JCB3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Black very clayey fine to coarse SAND with rootlets. (MADE GROUND)	0.30	(0.30)	112.58	
				Dark brown to black gravelly clayey fine to coarse SAND with occasional cobble of sandstone. Gravel is fine to coarse, angular to subrounded of sandstone, brick, concrete and wood. (MADE GROUND)	0.65	(0.35)	112.23	
				Plastic black clayey sandy fibrous PEAT with wood fragments and strong humic odour. (PEAT)	1.05	(0.40)	111.83	
				Soft grey sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone. (GLACIAL TILL)	2.20	(1.15)	110.68	
				Base of Excavation at 2.20m				

General Remarks:
1) Trial pit dug from ground level to 2.20m bgl. 2) No visual evidence of contamination. 3) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP13 Page No. 1 of 1

Method: Trial Pit	Date(s): 03/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385148.70, 411091.48	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 112.36m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Black to dark brown very sandy CLAY with rootlets. (MADE GROUND)	0.20	(0.20)	112.16	
0.30	ES			Soft black very sandy gravelly CLAY with pockets of firm brown clay, a medium cobble content of sandstone, wood and brick and a boulder of concrete. Gravel is fine to coarse, angular to subrounded of brick, sandstone, concrete and glass. (MADE GROUND)	0.80	(0.60)	111.56	
				Plastic to spongy black clayey fibrous PEAT with frequent wood fragments and a mild humic odour. (PEAT)	1.70	(0.90)	110.66	
				... At 1.20m bgl: Becoming brown with a strong humic odour.				
				Soft grey slightly sandy slightly gravelly CLAY with relict rootlets. Gravel is fine to coarse, subangular to subrounded of mudstone, sandstone and rare gypsum. (GLACIAL TILL)	2.80	(1.10)	109.56	
				Base of Excavation at 2.80m				

General Remarks:
1) Trial pit dug from ground level to 2.80m bgl. 2) No visual evidence of contamination. 3) Trapped perched groundwater at 1.20m bgl. 4) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Trialpit No TP14 Page No. 1 of 1

Method: Trial Pit	Date(s): 03/11/2021	Logged By: WS	Checked By: JB
Client: Tilbury Douglas	Co-ords: 385173.76, 411102.74	Stability: Stable.	Dimensions: 2.00m × 0.60m / Scale: 1:25
Hydrock Project No: C-19522	Ground Level: 112.08m OD	Plant: JCB3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Black slightly clayey slightly gravelly fine to coarse SAND with rootlets. Gravel is fine to coarse, angular to subrounded of brick. (MADE GROUND)	0.30	(0.30)	111.78	
0.40	ES			Black slightly clayey slightly gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of brick, concrete and sandstone. (MADE GROUND)	0.60	(0.30)	111.48	
				Spongy to firm black slightly sandy fibrous PEAT with a weak humic odour and wood fragments. (PEAT)	0.90	(0.30)	111.18	
				Plastic to spongy brown and black clayey sandy fibrous PEAT with large fragments of wood. (PEAT)	2.20	(1.30)	109.88	
				Soft grey sandy slightly gravelly CLAY with organic matter. Gravel is fine to coarse, subangular to subrounded of mudstone and sandstone. (GLACIAL TILL)	3.00	(0.80)	109.08	
				Base of Excavation at 3.00m				

General Remarks:
1) Trial pit dug from ground level to 3.00m bgl. 2) No visual evidence of contamination. 3) Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Borehole No WS01 Page No. 1 of 1	
Method: Window Sampler	Date(s): 02/11/2021	Logged By: WS	Drilled By: DMW Drilling
Client: Tilbury Douglas	Co-ords: 385099.87, 411133.10	Checked By: JB	Rig: Premier 110
Hydrock Project No: C-19522	Ground Level: 113.20m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
							Dark brown to black clayey fine to medium SAND with rootlets. (MADE GROUND)	0.20	(0.20)	113.00		
							Dark brown to black clayey gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of brick, concrete and quartzite. (MADE GROUND)	0.50	(0.30)	112.70		
			0.60	ES			Plastic black and occasional brown slightly sandy slightly clayey fibrous PEAT with a weak humic odour. (PEAT)					
1.20 - 2.00	80mm	100%	1.20	SPT	N=2 (1,0,1,0,1,0)		*... At 1.20m bgl: Humic odour is strong.*	1	(0.95)			
								1.45		111.75		
							Firm brownish grey sandy slightly gravelly organic CLAY with a weak humic odour. Gravel is fine to coarse, subangular to subrounded of sandstone, mudstone and wood. (GLACIAL TILL)	1.55	(0.10)	111.65		
2.00 - 3.00	75mm	90%	2.00	SPT	N=7 (1,2,1,2,2,2)		Very soft to soft light grey very sandy slightly gravelly organic CLAY with a mild humic odour. Gravel is fine to coarse, subangular to subrounded of sandstone, mudstone and wood. (GLACIAL TILL)	2	(0.45)			
								2.00		111.20		
							Loose light grey very gravelly fine to medium SAND. Gravel is fine to coarse, subangular to subrounded of sandstone and mudstone. (GLACIAL TILL)		(0.20)			
								2.20		111.00		
							Firm grey sandy slightly gravelly CLAY. Gravel is fine to medium, angular to subrounded of sandstone and mudstone. (GLACIAL TILL)		(0.80)			
3.00 - 5.00	65mm	0%	3.00	SPT	N=7 (1,1,2,2,2,1)		NO RECOVERY. (GLACIAL TILL)	3				
			4.00	SPT	N=9 (1,1,2,2,2,3)			4	(2.00)			
								5.00		108.20		
			5.00	SPT	N=10 (1,2,2,2,3,3)		Firm grey sandy slightly gravelly CLAY. Gravel is fine to medium, subangular to rounded of sandstone and mudstone. (GLACIAL TILL)	5	(0.00)	108.20		
							End of Borehole at 5.00m					
								6				

General Remarks:
1. Hand dug inspection pit from ground level to 1.20m bgl. 2. Windowless sampling from 1.20m to 5.00m bgl. 3. Complete at 5.00m bgl. 4. Installed on completion with a response zone between 0.50m and 1.45m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Borehole No WS02 Page No. 1 of 1

Method: Window Sampler	Date(s): 02/11/2021	Logged By: WS	Drilled By: DMW Drilling
Client: Tilbury Douglas	Co-ords: 385131.55, 411133.23	Checked By: JB	Rig: Premier 110
Hydrock Project No: C-19522	Ground Level: 112.96m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
							Dark brown to black clayey fine to medium SAND with rootlets. (MADE GROUND)	0.15	(0.15)	112.81		
			0.50	ES			Black very gravelly slightly clayey fine to coarse SAND with a medium to high cobble content of sandstone, brick and concrete. Gravel is fine to coarse, angular to subangular of brick, sandstone and concrete. (MADE GROUND)		(1.35)			
1.20 - 2.00	80mm	90%	1.20	SPT	N=1 (1,0,0,1,0,0)		*... From 1.20m bgl: Sand contains fibrous peat.*	1.50		111.46		
							Very soft light grey slightly gravelly CLAY with organic matter. Gravel is fine to coarse, subangular to subrounded of sandstone and mudstone. (GLACIAL TILL)		(0.80)			
2.00 - 3.00	75mm	75%	2.00	SPT	N=1 (1,1,0,0,1,0)			2.30		110.66		
							Soft light grey gravelly CLAY. Gravel is fine to coarse, subangular to rounded of sandstone and mudstone. (GLACIAL TILL)		(0.70)			
3.00 - 4.00	75mm	0%	3.00	SPT	N=8 (1,1,2,2,2,2)		NO RECOVERY. (GLACIAL TILL)	3.00	(1.00)	109.96		
4.00 - 5.00	65mm	95%	4.00	SPT	N=8 (2,1,1,2,3,2)		Soft to firm light grey gravelly CLAY. Gravel is fine to coarse, subangular to rounded of sandstone and mudstone. (GLACIAL TILL)	4.00	(0.80)	108.96		
							Firm light grey gravelly CLAY. Gravel is fine to coarse, subangular to rounded of sandstone and mudstone. (GLACIAL TILL)	4.80	(0.20)	108.16		
			5.00	SPT	N=11 (2,2,2,3,3,3)		End of Borehole at 5.00m	5.00		107.96		

General Remarks:
1. Hand dug inspection pit from ground level to 1.20m bgl. 2. Windowless sampling from 1.20m to 5.00m bgl. 3. Complete at 5.00m bgl. 4. Installed on completion with a response zone between 0.50m and 1.50m bgl. 5. Groundwater encountered at 0.95m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Borehole No WS03 Page No. 1 of 1	
Method: Window Sampler	Date(s): 02/11/2021	Logged By: WS	Drilled By: DMW Drilling
Client: Tilbury Douglas	Co-ords: 385154.07, 411145.38	Checked By: JB	Rig: Premier 110
Hydrock Project No: C-19522	Ground Level: 112.66m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
			0.20	ES			Dark brown to black slightly clayey slightly gravelly fine to coarse SAND with rootlets. Gravel is fine to coarse, angular to subrounded of brick, concrete and quartzite. (MADE GROUND)	0.45	(0.45)	112.21		
							Firm to plastic black and dark brown slightly clayey fibrous PEAT with a weak to mild humic odour and occasional wood fragments. (PEAT)	1 1.20	(0.75)	111.46		
1.20 - 2.00	85mm	0%					NO RECOVERY. (PEAT)	2 2.00	(0.80)	110.66		
2.00 - 3.00	85mm	100%					Spongy to plastic black and dark brown slightly clayey fibrous PEAT with a weak to mild humic odour and occasional wood fragments. (PEAT)	2.90	(0.90)	109.76		
3.00 - 4.00	75mm	100%					Soft grey very sandy CLAY. (GLACIAL TILL)	3 3.40	(0.50)	109.26		
4.00 - 5.00	65mm	85%					Very soft to soft light grey sandy slightly gravelly CLAY with occasional organic matter. Gravel is fine to coarse, subangular to subrounded of sandstone and mudstone. (GLACIAL TILL)	4	(1.60)			
							... At 4.95m bgl: One piece of white with pink stains GRAVEL of gypsum.	5 5.00		107.66		
							End of Borehole at 5.00m	6				

General Remarks:
1. Hand dug inspection pit from ground level to 1.20m bgl. 2. Windowless sampling from 1.20m to 5.00m bgl. 3. Complete at 5.00m bgl. 4. Installed on completion with a response zone between 1.00m and 3.00m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Borehole No WS04 Page No. 1 of 1	
Method: Window Sampler	Date(s): 02/11/2021	Logged By: WS	Drilled By: DMW Drilling
Client: Tilbury Douglas	Co-ords: 385103.82, 411115.95	Checked By: JB	Rig: Premier 110
Hydrock Project No: C-19522	Ground Level: 113.08m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
							Dark brown to black slightly clayey fine to medium SAND with rootlets. (MADE GROUND)	0.15	(0.15)	112.93		
							Dark brown to black slightly clayey gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of brick and concrete. (MADE GROUND)	0.50	(0.35)	112.58		
							Plastic to firm black slightly sandy slightly clayey fibrous PEAT with occasional wood fragments. (PEAT)	1.20	(0.70)	111.88		
1.20 - 2.00	80mm	100%					Soft light grey very sandy slightly gravelly CLAY with organic matter. Gravel is fine to coarse, subangular to rounded of sandstone and mudstone. (GLACIAL TILL)	1.65	(0.45)	111.43		
							Firm dark grey mottled greyish brown slightly sandy gravelly CLAY. Gravel is fine to coarse, subangular to rounded of mudstone and sandstone. (GLACIAL TILL)	2.00	(0.35)	111.08		
2.00 - 3.00	75mm	90%					Very soft grey very sandy slightly gravelly CLAY. Gravel is fine to coarse, subangular to rounded of mudstone and sandstone. (GLACIAL TILL)	2.40	(0.40)	110.68		
3.00 - 4.00	65mm	50%					Firm grey sandy CLAY. (GLACIAL TILL) *... From 3.50m-4.00m bgl: No recovery.*	4.40	(2.00)	108.68		
4.00 - 5.00	65mm	40%					NO RECOVERY. (GLACIAL TILL)	5.00	(0.60)	108.08		
							End of Borehole at 5.00m					

General Remarks:
1. Hand dug inspection pit from ground level to 1.20m bgl. 2. Windowless sampling from 1.20m to 5.00m bgl. 3. Complete at 5.00m bgl. 4. Installed on completion with a response zone between 0.50m and 1.00m bgl. 5. Groundwater seepage at 0.80m bgl and then groundwater at 1.70m bgl. 6. No ES samples were taken.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Borehole No WS05 Page No. 1 of 1	
Method: Window Sampler	Date(s): 01/11/2021	Logged By: WS	Drilled By: DMW Drilling
Client: Tilbury Douglas	Co-ords: 385121.38, 411122.93	Checked By: JB	Rig: Premier 110
Hydrock Project No: C-19522	Ground Level: 113.05m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
							Soft dark greyish dark brown very sandy gravelly CLAY with rootlets and low cobble content of brick. Gravel is fine to coarse, angular to subrounded of brick and concrete. (MADE GROUND)	0.30	(0.30)	112.75		
			0.40	ES			Black clayey slightly gravelly organic fine coarse SAND. Gravel is fine to coarse, angular to subrounded of brick. (MADE GROUND)	0.50	(0.20)	112.55		
						▼	Firm black fibrous PEAT with wood and a slight humic odour. (PEAT)	1.20	(0.70)	111.85		
1.20 - 2.00	85mm	100%	1.20	SPT	N=3 (1,0,1,1,0,1)		Plastic black fibrous PEAT with wood and slight humic odour. (PEAT)	1.40	(0.20)	111.65		
							Very soft to firm dark grey and light grey silty very sandy gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of mudstone and sandstone. (GLACIAL TILL)	2.00	(0.60)	111.05		
2.00 - 3.00	75mm	35%	2.00	SPT	N=6 (1,2,1,1,2,2)		Soft grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to subrounded of sandstone, mudstone and occasional coal fragments. (GLACIAL TILL)	2.35	(0.35)	110.70		
							NO RECOVERY. (GLACIAL TILL)	3.00	(0.65)	110.05		
3.00 - 4.00	65mm	45%	3.00	SPT	N=7 (1,1,2,1,2,2)		Soft grey very sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone. (GLACIAL TILL)	3.45	(0.45)	109.60		
4.00 - 5.00	55mm	55%	4.00	SPT	N=5 (3,2,1,1,1,2)		NO RECOVERY. (GLACIAL TILL)	5.00	(1.55)	108.05		
			5.00	SPT	N=8 (2,1,1,3,2,2)		End of Borehole at 5.00m					

General Remarks:
1. Hand dug inspection pit from ground level to 1.20m bgl. 2. Windowless sampling from 1.20m to 5.00m bgl. 3. Complete at 5.00m bgl. 4. Installed on completion with a response zone between 0.50m and 1.40m bgl. 5. Groundwater encountered at 0.75m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Borehole No WS06 Page No. 1 of 1	
Method: Window Sampler	Date(s): 01/11/2021	Logged By: WS	Drilled By: DMW Drilling
Client: Tilbury Douglas	Co-ords: 385138.86, 411116.37	Checked By: JB	Rig: Premier 110
Hydrock Project No: C-19522	Ground Level: 112.63m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
			0.20	ES			Soft dark brown to black very sandy CLAY with rootlets. (MADE GROUND)	0.15	(0.15)	112.48		
							Black and brown very clayey gravelly fine to coarse SAND to a very sandy gravelly clay with pockets of peat and medium cobble content of brick and concrete. Gravel is fine to coarse, angular to subangular of brick, concrete, sandstone, wood and glass. (MADE GROUND)	0.45	(0.30)	112.18		
1.20 - 2.00	80mm	100%					Plastic black fibrous PEAT with fragments of wood. (PEAT) *... At 1.30m bgl: Becoming brown.*	1.50	(1.05)	111.13		
							Very soft to soft grey very sandy gravelly CLAY. Gravel is fine to coarse, subangular to angular of sandstone and mudstone. (GLACIAL TILL)	1.80	(0.30)	110.83		
2.00 - 3.00	75mm	100%					Firm grey sandy gravelly CLAY. Gravel is fine to coarse, subangular to angular of sandstone and mudstone. (GLACIAL TILL)	2.00	(0.20)	110.63		
3.00 - 4.00	65mm	90%					Very soft to soft grey very sandy gravelly CLAY. Gravel is fine to coarse, subangular to angular of sandstone and mudstone. (GLACIAL TILL)	4.15	(2.15)	108.48		
4.00 - 5.00	65mm	15%					NO RECOVERY. (GLACIAL TILL)	5.00	(0.85)	107.63		
							End of Borehole at 5.00m					

General Remarks:
1. Hand dug inspection pit from ground level to 1.20m bgl. 2. Windowless sampling from 1.20m to 5.00m bgl. 3. Complete at 5.00m bgl. 4. Installed on completion with a response zone between 0.50m and 2.50m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Borehole No WS07 Page No. 1 of 1

Method: Window Sampler	Date(s): 01/11/2021	Logged By: WS	Drilled By: DMW Drilling
Client: Tilbury Douglas	Co-ords: 385153.57, 411128.05	Checked By: JB	Rig: Premier 110
Hydrock Project No: C-19522	Ground Level: 112.51m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
							Soft dark brown very sandy CLAY with rootlets. (MADE GROUND)	0.10	(0.10)	112.41		
			0.30	ES			Black and dark brown very sandy gravelly CLAY with a medium cobble content of brick and concrete. Gravel is fine to coarse, angular to subangular of brick, concrete and clay pipe fragments. (MADE GROUND)	0.50	(0.40)	112.01		
1.00 - 2.00	80mm	0%					Plastic black slightly sandy fibrous PEAT with a slight humic odour. (PEAT) 1	1.20	(0.70)	111.31		
2.00 - 3.00	75mm	100%					NO RECOVERY. (PEAT) 2	2.00	(0.80)	110.51		
							Plastic black becoming brown fibrous PEAT with wood fragments. (PEAT)	2.90	(0.90)	109.61		
3.00 - 4.00	65mm	55%					Soft to firm light grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, subangular to rounded of sandstone and mudstone. (GLACIAL TILL) 3	3.15	(0.25)	109.36		
4.00 - 5.00	55mm	0%					NO RECOVERY. (GLACIAL TILL) 4	5.00	(1.85)	107.51		
							End of Borehole at 5.00m 5 6					

General Remarks:
1. Hand dug inspection pit from ground level to 1.20m bgl. 2. Windowless sampling from 1.20m to 5.00m bgl. 3. Complete at 5.00m bgl. 4. Installed on completion with a response zone between 0.50m and 1.50m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Borehole No WS08 Page No. 1 of 1

Method: Window Sampler	Date(s): 01/11/2021	Logged By: WS	Drilled By: DMW Drilling
Client: Tilbury Douglas	Co-ords: 385163.55, 411115.68	Checked By: JB	Rig: Premier 110
Hydrock Project No: C-19522	Ground Level: 112.26m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
							Dark brown and black clayey fine to coarse SAND. (MADE GROUND)	0.15	(0.15)	112.11		
							Black and dark brown gravelly clayey fine to coarse SAND. Gravel is fine to coarse, angular to subangular of concrete, brick and occasional chipboard and rootlets. (MADE GROUND)	0.50	(0.35)	111.76		
			0.60	ES			Plastic black slightly sandy, clayey fibrous PEAT with wood fragments and slightly humic odour. (PEAT)	1.75	(1.25)	110.51		
1.20 - 2.00	80mm	100%	1.20	SPT	N=0 (0,0,0,0,0,0)							
							Plastic brown slightly sandy very fibrous PEAT with a strong humic odour. (PEAT)	2.57	(0.82)	109.69		
2.00 - 3.00	75mm	95%	2.00	SPT	N=0 (1,0,0,0,0,0)							
							Very soft light grey very sandy gravelly CLAY. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone. (GLACIAL TILL)	3.57	(1.00)	108.69		
3.00 - 4.00	75mm	100%	3.00	SPT	N=2 (1,0,1,0,1,0)							
							Light brownish grey very clayey fine SAND. (GLACIAL TILL)	3.67	(0.10)	108.59		
							Soft light grey sandy CLAY. (GLACIAL TILL)	4.00	(0.33)	108.26		
4.00 - 5.00	65mm	0%	4.00	SPT	N=5 (3,2,1,1,1,2)		NO RECOVERY. (GLACIAL TILL)	5.00	(1.00)	107.26		
			5.00	SPT	N=8 (2,1,1,3,2,2)		End of Borehole at 5.00m					

General Remarks:
1. Hand dug inspection pit from ground level to 1.20m bgl. 2. Windowless sampling from 1.20m to 5.00m bgl. 3. Complete at 5.00m bgl. 4. Installed on completion with a response zone between 1.00m and 2.00m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Borehole No RO01 Page No. 1 of 2

Method: Rotary Open	Date(s): 22/06/2022	Logged By: JH	Drilled By: DMW Drilling
Client: Tilbury Douglas	Co-ords: 385158.99, 411133.52	Checked By: JB	Flush: Water
Hydrock Project No: C-19522			Scale: 1:100

Run (m)	Samples / Tests: Depth (m)	Samples / Tests: Type	Samples / Tests: Results	Drilling Record: Weight (Kg)	Drilling Record: Mins	Drilling Record: Secs	Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
								Grass over dark brown gravelly clayey fine to coarse SAND. Gravel is fine to coarse, angular to subangular of sandstone, conrete, plastic and rootlets. (MADE GROUND) *... At 0.30m bgl. one concrete cobble.*	0.40	(0.40)			
								Dark browish black fiberous PEAT with wood fragments and slight humic odour. (PEAT)	4.50	(4.10)			
								Grey silty CLAY (Drillers description) (GLACIAL TILL)	10.50	(6.00)			
								Grey MUDSTONE with sandstone bands (Drillers description) (PENNINE LOWER COAL MEASURES)	16.50	(6.00)			
								Grey shaley MUDSTONE with coal traces (Drillers description) (PENNINE LOWER COAL MEASURES)	19.50	(3.00)			
								Grey MUDSTONE with sandstone bands (Drillers					

Progress and Observations

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

General Remarks:
1. Location cleared for services. 2. Hand dug inspection pit from ground level to 1.20m bgl. 3. Hole progressed using rotary open hole to 30.00m bgl. 4.Hole completed at 30.00m bgl and installed with standpipe - response zone from 11.00m to 19.50m bgl. 5. Gas concentrations remained within a normal range at all times.

Logged in general accordance with BS5930:2015

Hydrock	Project: Rochdale SEND - Passivhaus	Borehole No RO01 Page No. 2 of 2

Method: Rotary Open	Date(s): 22/06/2022	Logged By: JH	Drilled By: DMW Drilling
Client: Tilbury Douglas	Co-ords: 385158.99, 411133.52	Checked By: JB	Flush: Water
Hydrock Project No: C-19522			Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
								Grey MUDSTONE with sandstone bands (Drillers description) (PENNINE LOWER COAL MEASURES)	28.50	(9.00)			
								Grey MUDSTONE (Drillers description) (PENNINE LOWER COAL MEASURES)	30.00	(1.50)			
								End of Borehole at 30.00m					

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. Location cleared for services. 2. Hand dug inspection pit from ground level to 1.20m bgl. 3. Hole progressed using rotary open hole to 30.00m bgl. 4.Hole completed at 30.00m bgl and installed with standpipe - response zone from 11.00m to 19.50m bgl. 5. Gas concentrations remained within a normal range at all times.

Logged in general accordance with BS5930:2015

Exploratory Hole Photographs

Site Investigation Photograph 1

Date: 01/11/21

Direction Photograph Taken: n/a.

Description: Arisings from the hand pit of WS06, 0.00-1.20m bgl, comprising Made Ground and Peat.

Site Investigation Photograph 2

Date: 01/11/21

Direction Photograph Taken: n/a.

Description: Arisings from WS06, 1.20-5.00m bgl (Note: 1.20-2.00m is at the bottom of the picture), comprising Peat over Glacial Till.

Site Investigation Photograph 3

Date: 01/11/21

Direction Photograph Taken: n/a.

Description: Arisings from the hand pit of WS05, 0.00-1.20m bgl, comprising Made Ground and Peat.

Site Investigation Photograph 4

Date: 01/11/21

Direction Photograph Taken: n/a.

Description: Arisings from WS06, 1.20-5.00m bgl, comprising Peat over Glacial Till.

Site Investigation Photograph 5

Date: 02/11/21

Direction Photograph Taken: n/a.

Description: Arisings from the hand pit of WS03, 0.00-1.20m bgl, comprising Made Ground.

Site Investigation Photograph 6

Date: 02/11/21

Direction Photograph Taken: n/a.

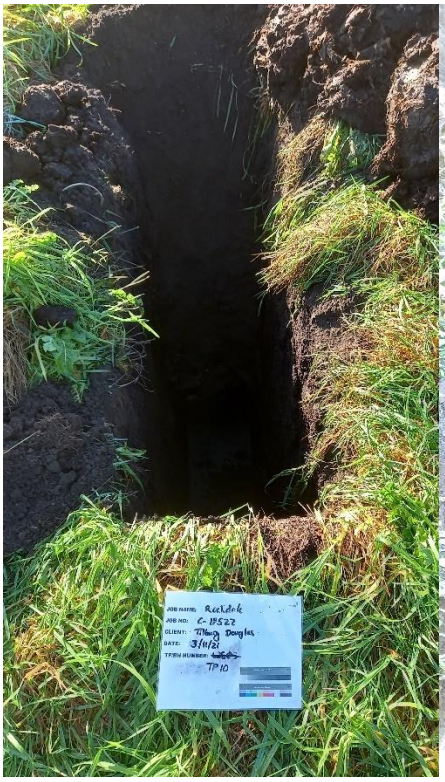
Description: Arisings from WS03, 1.20-5.00m bgl (Note: No recovery from 1.20-2.00m bgl), comprising Peat over Glacial Till.

Site Investigation Photographs 7

Date: 03/11/21

Direction Photograph Taken: n/a.

Description: Images of TP10, showing Made Ground to 0.70m bgl over Peat to 3.00m bgl over Glacial Till to a depth of 3.10m bgl.



Site Investigation Photograph 8

Date: 03/11/21

Direction Photograph Taken: n/a.

Description: Image of the arisings from TP10, showing Peat and Glacial Till.

Site Investigation Photograph 9

Date: 03/11/21

Direction Photograph Taken: n/a.

Description: Image of TP12, showing Made Ground to 0.60m bgl over Peat to 1.80m bgl over Glacial Till to a depth of 2.80m bgl.

Site Investigation Photograph 10

Date: 03/11/21

Direction Photograph Taken: n/a.

Description: Image of the arisings from TP12, showing Made Ground, Peat and Glacial Till.

Site Investigation Photograph 11

Date: 03/11/21

Direction Photograph Taken: n/a.

Description: Image of TP08, showing Made Ground to 0.95m bgl over Peat to 1.50m bgl over Glacial Till to a depth of 3.00m bgl.

Site Investigation Photograph 12

Date: 03/11/21

Direction Photograph Taken: n/a.

Description: Image of the arisings from TP08, showing Made Ground, Peat and Glacial Till.

Site Investigation Photograph 13

Date: 03/11/21

Direction Photograph Taken: n/a.

Description: Image of TP02, showing Made Ground to 0.70m bgl over Peat to 1.25m bgl over Glacial Till to a depth of 3.00m bgl.

Site Investigation Photograph 14

Date: 03/11/21

Direction Photograph Taken: n/a.

Description: Image of the arisings from TP02, showing Made Ground, Peat and Glacial Till.

Site Investigation Photograph 15

Date: 03/11/21

Direction Photograph Taken: n/a.

Description: Image of TP07, showing Made Ground to 0.45m bgl over Peat to 2.20m bgl over Glacial Till to a depth of 3.00m bgl.

Site Investigation Photograph 16

Date: 03/11/21

Direction Photograph Taken: n/a.

Description: Image of the arisings from TP07, showing Made Ground, Peat and Glacial Till.

Appendix C Site Monitoring Data and Ground Gas Risk Assessment

Site: Rochdale SEND - Passivhaus
Job number: C-19522
Client: Tilbury Douglas

Gas analyser: GFM 435 SERIES
Equipment check OK: Y
Service in date: Y
Calibration check OK: Y
Name of person monitoring: See Notes.

Notes on site conditions:

Date	Operator	Weather Conditions
08/06/20-17/07/20	Geotechnics	Cloudy
15/11/2021	Enitial- R. C-Williams	Overcast
30/11/2021	Enitial- S Mullen	Showers
13/12/2021	Enitial	Rain
29/12/2022	Enitial	Rain
13/01/2022	Enitial	Cloudy
24/01/2022	Enitial	Cloudy

Notes: LEL = lower explosive limit = 5%v/v. * where the flow or gas concertration is less than the limit of detection of the instrument, the detection limit is reported (Highlighted in **blue**). GSVs are rounded to 3 places.

Monitoring round		Borehole details					Pressure and flow					Gas concentrations										GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Other Gases		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
												Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	CO (PPM)	H_2S (PPM)			
							Max. individual values:				**3.2**		**12.7**		**44.0**		**18.3**		**21.0**			**0.022**	**0.442**	**Summary statistics for this monitoring period.**
							Min. individual values:				0.1		0.1		0.1		0.1		3.1			0.000	0.000	
							Worst-case GSVs based on max. individual flow and max. individual conc. over the duration of this table:															**0.4064**	**0.5856**	
08/06/20		BH101	S	1.90	1.90	D	1008	S		0.1	0.1	0.1	0.1	2	2	23.0	3.1	20.7	18.4	1	1	0.000	0.003	
08/06/20		BH102	S	12.00	9.81		1007	S		0.1	0.1	0.1	0.1	2	2	0.8	0.8	20.9	20.1	1	1	0.000	0.001	
15/06/20		BH101	S	1.90	1.90	D	1004	S		0.1	0.1	0.1	0.1	2	2	2.6	2.6	20.8	18.8	1	1	0.000	0.003	
15/06/20		BH102	S	12.00	9.85		1003	S		0.1	0.1	0.1	0.1	2	2	0.2	0.2	20.7	20.6	1	1	0.000	0.000	
25/06/20		BH101	S	1.90	1.90	D	1006	F		0.1	0.1	0.1	0.1	2	2	4.0	4.0	19.4	14.4	2	2	0.000	0.004	
25/06/20		BH102	S	12.00	9.80		1007	F		0.1	0.1	0.1	0.1	2	2	1.3	1.2	19.6	14.2	2	2	0.000	0.001	
02/07/20		BH101	S	1.90	1.60		999	R		0.1	0.1	0.1	0.1	2	2	4.4	4.4	20.5	15.9	1	1	0.000	0.004	
02/07/20		BH102	S	12.00	9.65		999	R		0.1	0.1	0.1	0.1	2	2	0.2	0.2	20.6	20.5	1	0	0.000	0.000	
10/07/20		BH101	S	1.90	1.13		1006	S		0.1	0.1	0.1	0.1	2	2	0.6	0.2	20.6	20.6	1	1	0.000	0.000	
10/07/20		BH102	S	12.00	9.56		1005	S		0.1	0.1	0.1	0.1	2	2	0.4	0.4	20.8	19.8	1	1	0.000	0.000	
17/07/20		BH101	S	1.90	1.29		1007	S		0.1	0.1	0.1	0.1	2	2	0.6	0.3	20.3	20.2	1	1	0.000	0.000	
17/07/20		BH102	S	12.00	12.00	D	1007	S		0.1	0.1	0.1	0.1	2	2	0.3	0.3	20.5	19.7	1	1	0.000	0.000	
15/11/21	AM	WS01	S	1.70	0.74		1016	S	0.1	0.1	0.1	0.1	0.1	2	2	4.4	4.4	16.3	16.3	1	1	0.000	0.004	
15/11/21	AM	WS02	S	1.70	0.88		1015	S	0.1	0.1	0.1	0.1	0.1	2	2	3.0	3.0	16.8	16.8	1	1	0.000	0.003	
15/11/21	AM	WS03	S	2.29	1.56		1014	S	0.0	0.1	0.1	1.1	1.0	22	20	12.7	12.5	11.0	11.0	1	1	0.001	0.013	
15/11/21	AM	WS04	S	1.15	0.90		1016	S	0.1	0.1	0.1	0.1	0.1	2	2	3.2	3.2	17.5	17.5	1	1	0.000	0.003	
15/11/21	AM	WS05	S	1.60	0.78		1016	S	0.1	0.1	0.1	0.1	0.1	2	2	11.0	11.0	9.1	9.1	1	1	0.000	0.011	
15/11/21	AM	WS06	S	2.50	1.11		1016	S	0.1	0.1	0.1	0.1	0.1	2	2	1.0	1.0	19.0	19.0	1	1	0.000	0.001	
15/11/21	AM	WS07	S	1.55	0.75		1015	S	0.1	0.1	0.1	0.1	0.1	2	2	6.6	6.6	13.7	13.7	1	1	0.000	0.007	
15/11/21	AM	WS08	S	2.20	1.62		1015	S	0.2	0.1	0.1	12.9	12.7	>>>>>	>>>>>	15.9	15.8	10.1	10.1	5	1	0.013	0.016	
30/11/21	AM	WS01	S	1.70	0.68		999	F	3.8	0.7	0.7	0.1	0.1	2	2	8.0	8.0	14.0	14.0	1	1	0.001	0.056	

Monitoring round		Borehole details					Pressure and flow					Gas concentrations										GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Other Gases		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
												Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	CO (PPM)	H_2S (PPM)			
30/11/21	AM	WS02	S	1.70	0.80		999	F	-0.5	0.1	0.1	0.1	0.1	2	2	3.0	3.0	18.7	18.7	1	1	0.000	0.003	
30/11/21	AM	WS03	S	2.29	1.80		999	F	6.9	2.2	2.2	0.1	0.1	2	2	15.7	15.7	6.0	6.0	1	1	0.002	0.345	
30/11/21	AM	WS04	S	1.15	0.83		999	F	-0.1	0.1	0.1	0.1	0.1	2	2	3.2	3.2	19.1	19.1	1	1	0.000	0.003	
30/11/21	AM	WS05	S	1.60	1.15		999	F	-0.2	0.1	0.1	0.1	0.1	2	2	5.4	5.4	17.4	17.4	1	1	0.000	0.005	
30/11/21	AM	WS06	S	2.50	1.13		1000	F	7.2	2.3	2.3	0.1	0.1	2	2	3.7	3.7	19.4	19.4	1	1	0.002	0.085	
30/11/21	AM	WS07	S	1.55	1.09		999	F	1.2	0.3	0.3	0.1	0.1	2	2	6.5	6.5	15.4	15.4	1	1	0.000	0.020	
30/11/21	AM	WS08	S	2.20	2.01		999	F	0.2	0.1	0.1	1.5	1.5	30	30	17.2	17.2	9.3	9.3	2	1	0.002	0.017	
13/12/21	08:20	WS01	S	1.70	0.68		1008	S	-0.3	0.1	0.1	0.1	0.1	0.1	0.1	5.5	5.5	16.1	16.1	1.0	1	0.000	0.006	
13/12/21	08:15	WS02	S	1.70	1.20		1009	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.6	3.6	18.1	18.1	1.0	1	0.000	0.004	
13/12/21	08:11	WS03	S	2.29	1.86		1009	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.6	0.3	20.9	20.9	1.0	1	0.000	0.000	
13/12/21	08:25	WS04	S	1.15	0.95		1008	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.1	3.1	19.5	19.5	1.0	1	0.000	0.003	
13/12/21	08:30	WS05	S	1.60	0.65		1008	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	0.5	20.6	20.6	1.0	1	0.000	0.001	
13/12/21	08:35	WS06	S	2.50	1.60		1008	S	-0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	21.0	21.0	1.0	1	0.000	0.000	
13/12/21	08:40	WS07	S	1.55	0.70		1008	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.7	3.5	19.3	19.3	2.0	1	0.000	0.004	
13/12/21	08:45	WS08	S	2.20	2.20		1008	S	1.5	0.7	0.7	2.2	2.2	44	44	18.3	18.3	5.3	5.3	1.0	1	0.015	0.128	
29/12/21	08:55	WS01	S	1.70	0.69		983	S	6.5	0.2	0.2	0.1	0.1	0.1	0.1	7.3	7.3	7.6	7.6	1.0	1.0	0.000	0.015	
29/12/21	09:02	WS02	S	1.69	0.75		983	S	0.0	0.1	0.1	0.1	0.1	0.1	0.1	3.8	3.8	17.4	17.4	1.0	1.0	0.000	0.004	
29/12/21	09:05	WS03	S	2.30	1.35		983	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.6	0.2	21.0	21.0	1.0	1.0	0.000	0.000	
29/12/21	08:51	WS04	S	1.14	0.80		983	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.8	2.8	19.1	19.1	1.0	1.0	0.000	0.003	
29/12/21	08:48	WS05	S	1.59	0.68		984	S	0.5	0.1	0.1	0.1	0.1	0.1	0.1	6.7	6.7	13.5	13.5	1.0	1.0	0.000	0.007	
29/12/21	08:44	WS06	S	2.39	1.10		984	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	20.7	20.7	1.0	1.0	0.000	0.000	
29/12/21	08:40	WS07	S	1.55	0.62		984	S	0.2	0.1	0.1	0.1	0.1	0.1	0.1	6.0	6.0	15.0	15.0	1.0	1.0	0.000	0.006	
29/12/21	08:36	WS08	S	2.19	1.65		983	S	39.3	0.3	0.3	1.7	1.6	34	32	14.4	14.4	3.1	3.1	1.0	1.0	0.005	0.043	
13/01/22	12:10	WS01	S	1.70	0.60		1027	F	-0.8	-0.8	0.8	0.1	0.1	0.1	0.1	0.9	0.9	20.0	20.0	1.0	1	0.001	0.007	
13/01/22	12:37	WS02	S	1.70	0.85		1029	F	-0.2	0.1	0.1	0.1	0.1	0.1	0.1	3.6	3.6	18.2	18.2	1.0	1.0	0.000	0.004	
13/01/22	08:11	WS03	S	2.29	1.41		1028	F	1.4	0.1	0.1	0.2	0.2	4.0	4.0	9.2	9.2	18.8	18.8	1.0	1.0	0.000	0.009	
13/01/22	08:25	WS04	S	1.15	0.88		1029	F	-0.2	0.1	0.1	0.1	0.1	0.1	0.1	3.0	3.0	18.3	18.3	1.0	1.0	0.000	0.003	
13/01/22	08:30	WS05	S	1.60	0.72		1029	F	3.0	0.1	0.1	0.1	0.1	0.1	0.1	5.0	5.0	16.8	16.8	1.0	1.0	0.000	0.005	
13/01/22	08:35	WS06	S	2.50	1.12		1029	F	-2.0	-0.4	0.4	0.1	0.1	0.1	0.1	0.9	0.8	20.8	20.8	2.0	1.0	0.000	0.003	
13/01/22	08:40	WS07	S	1.55	0.73		1029	F	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.1	3.1	19.0	19.0	1.0	1.0	0.000	0.003	
13/01/22	08:45	WS08	S	2.20	1.49		1029	F	13.4	3.2	3.2	0.7	0.7	14	14	13.8	13.8	5.7	5.7	1.0	1.0	0.022	0.442	
13/01/22	11:54	BH102	S	2.32	1.80		1028	F	-0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.6	0.5	20.4	20.4	1.0	1.0	0.000	0.001	
24/01/22	08:40	WS01	S		0.82		1020	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	7.5	7.5	6.8	6.8	1.0	1.0	0.000	0.008	
24/01/22	08:47	WS02	S		0.92		1020	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.3	3.3	18.1	18.1	1.0	1.0	0.000	0.003	
24/01/22	08:50	WS03	S		1.51		1020	S	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.7	0.5	21.0	21.0	1.0	1.0	0.000	0.001	
24/01/22	08:36	WS04	S		0.91		1020	S	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.1	3.1	18.4	18.4	1.0	1.0	0.000	0.003	
24/01/22	08:33	WS05	S		0.82		1020	S	0.3	0.1	0.1	0.1	0.1	0.1	0.1	6.0	6.0	14.8	14.8	1.0	1.0	0.000	0.006	
24/01/22	08:29	WS06	S		1.12		1020	S	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	20.0	20.2	1.0	1.0	0.000	0.000	

Monitoring round		Borehole details					Pressure and flow					Gas concentrations										GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Other Gases		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
												Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	CO (PPM)	H_2S (PPM)			
24/01/22	08:26	WS07	S		0.86		1020	S	0.0	0.1	0.1	0.1	0.1	0.1	0.1	5.4	5.4	15.5	15.5	1.0	1.0	0.000	0.005	
24/01/22	08:18	WS08	S		1.45		1020	S	9.8	0.2	0.2	0.3	0.2	6	4	10.1	10.1	3.4	3.4	1.0	1.0	0.000	0.020	

Hydrock

Site: Rochdale Passivhaus
Job number: C-19522-C
Client: Tilbury Douglas

Gas analyser: GA5000 SERIES
Equipment check OK: Y
Service in date: Y
Calibration check OK: Y
Name of person monitoring: See Notes.

Notes on site conditions:

Date	Operator	Weather Conditions
28/06/2022	JH	
08/07/2022	AE	Warm and sunny with partial cloud cover. 19°C, 9mph WNW.
13/07/2022	AE	Warm and sunny with partial cloud cover. 18°C, 11mph WNW.

Notes: LEL = lower explosive limit = 5%v/v. * where the flow is less than the limit of detection of the instrument, the detection limit is reported (Highlighted in **blue**). GSVs are rounded to 3 places.

Monitoring round		Borehole details					Pressure and flow					Gas concentrations											GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Other Gases		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
													Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	CO (PPM)	H_2S (PPM)			
							Max. individual values:				**0.1**			**0.1**		**4.0**		**0.2**		**20.6**			**0.000**	**0.000**	**Summary statistics for this monitoring period.**
							Min. individual values:				0.1			0.1		2.0		0.1		20.0			0.000	0.000	
							Worst-case GSVs based on max. individual flow and max. individual conc. over the duration of this table:																**0.0001**	**0.0002**	
28/06/22	AM	BH01	S	10.5 - 18.5	10.85		1002	R	0.00	0.1	0.1	NR	0.2	0.1	4	4	0.4	0.1	20.3	20.6	7	1	0.000	0.000	Peak CO was recorded at 108ppm.
08/07/22	PM	BH01	S	10.5 - 18.5	9.94		1033	R	13.43	0.1	0.1	NR	0.9	0.1	18	2	1.8	0.2	18.6	20.0	14	1	0.000	0.000	
13/07/22	AM	BH01	S	10.5 - 18.5	9.94		1013	R	14.01	0.1	0.1	NR	1.2	0.1	24	2	2.5	0.2	17.6	20.4	5	1	0.000	0.000	Stable CO was recorded as 3ppmv.

Appendix D Contamination Test Results and Statistical Analysis

Contamination Test Results

Jason Bradley
Hydrock Consultants Ltd
4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY

t: 01782 261919
f: 01782 262020
e: JasonBradley@hydrock.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 21-21073

Replaces Analytical Report Number: 21-21073, issue no. 1
Additional analysis undertaken.

Project / Site name:	Rochdale Passivhaus	**Samples received on:**	03/11/2021
Your job number:	C-19522	**Samples instructed on/ Analysis started on:**	05/11/2021
Your order number:	PO11375	**Analysis completed by:**	18/11/2021
Report Issue Number:	2	**Report issued on:**	18/11/2021
Samples Analysed:	9 soil samples		

Signed: A. Czerwińska

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

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

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

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

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

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

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073072	2073073	2073074	2073075	2073076
Sample Reference				TP10	TP11	TP12	TP13	TP14
Sample Number				1	1	1	1	1
Depth (m)				0.10	0.50	0.30	0.30	0.40
Date Sampled				03/11/2021	03/11/2021	03/11/2021	03/11/2021	03/11/2021
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	39	48
Moisture Content	%	0.01	NONE	30	18	14	14	35
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0	1.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	< 0.001	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	< 0.001	-	-

General Inorganics

pH - Manual	pH Units	N/A	MCERTS	-	-	-	-	-
pH - Automated	pH Units	N/A	MCERTS	6.6	6.5	6.7	7.6	7.5
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.013	0.015	0.013	0.014	0.016
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.064	0.059	0.056	-	0.070
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	-	-	0.065	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.79	0.90	1.3	0.70	1.2
Anthracene	mg/kg	0.05	MCERTS	0.19	0.23	0.34	< 0.05	0.47
Fluoranthene	mg/kg	0.05	MCERTS	1.8	2.1	2.0	1.8	3.5
Pyrene	mg/kg	0.05	MCERTS	1.5	1.8	1.7	1.6	2.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.92	1.3	1.1	1.2	2.3
Chrysene	mg/kg	0.05	MCERTS	0.77	1.1	1.0	1.0	1.4
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.77	1.3	1.4	1.3	1.6
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.48	0.61	0.36	0.61	0.93
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.61	1.2	1.0	1.2	1.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.44	0.65	0.50	0.63	0.70
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.21	0.25
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.46	0.70	0.62	0.74	0.74

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	8.73	11.9	11.3	11.0	17.2

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073072	2073073	2073074	2073075	2073076
Sample Reference				TP10	TP11	TP12	TP13	TP14
Sample Number				1	1	1	1	1
Depth (m)				0.10	0.50	0.30	0.30	0.40
Date Sampled				03/11/2021	03/11/2021	03/11/2021	03/11/2021	03/11/2021
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	15	14	19	26	35
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.74	0.77	0.85	1.2	1.6
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8	0.5	0.5	0.8	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.6	0.6	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	16	20	18	23	21
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	16	20	19	23	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	52	51	54	79	92
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	150	120	210	190
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5	< 0.3	< 0.3	< 0.3	0.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	23	22	32	36
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	23	29	28	39	52
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	91	200	140	230	160
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	< 8.0	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	-	< 10	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	< 10	-	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	< 10	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	5.9	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	12	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	27	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	44	-	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	44	-	-
TPH Total C5 - C44	mg/kg	10	NONE	-	-	44	-	-
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chloroethane	µg/kg	1	NONE	-	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073072	2073073	2073074	2073075	2073076
Sample Reference				TP10	TP11	TP12	TP13	TP14
Sample Number				1	1	1	1	1
Depth (m)				0.10	0.50	0.30	0.30	0.40
Date Sampled				03/11/2021	03/11/2021	03/11/2021	03/11/2021	03/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-

VOCs TICs

VOCs TICs Compound Name		N/A	NONE	-	-	ND	-	-
VOC % Match	%	N/A	NONE	-	-	0	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073072	2073073	2073074	2073075	2073076
Sample Reference				TP10	TP11	TP12	TP13	TP14
Sample Number				1	1	1	1	1
Depth (m)				0.10	0.50	0.30	0.30	0.40
Date Sampled				03/11/2021	03/11/2021	03/11/2021	03/11/2021	03/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	1.3	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	0.34	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	2.0	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	1.7	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	1.1	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	1.0	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.4	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	0.36	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	1.0	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	0.50	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	0.62	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073072	2073073	2073074	2073075	2073076
Sample Reference				TP10	TP11	TP12	TP13	TP14
Sample Number				1	1	1	1	1
Depth (m)				0.10	0.50	0.30	0.30	0.40
Date Sampled				03/11/2021	03/11/2021	03/11/2021	03/11/2021	03/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

SVOCs TICs

SVOCs TICs Compound Name		N/A	NONE	-	-	Benzo[e]pyrene	-	-
SVOC % Match	%	N/A	NONE	-	-	98	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	2-Pentacosanone	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	9-Tricosene, (Z)-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	1-Docosene	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Friedelan-3-one	-	-
SVOC % Match	%	N/A	NONE	-	-	94	-	-

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073077	2073078	2073079	2073080
Sample Reference				WS01	WS03	WS05	WS08
Sample Number				1	1	1	1
Depth (m)				0.60	0.20	0.40	0.60
Date Sampled				02/11/2021	02/11/2021	01/11/2021	01/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	68	33	23	80
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	< 0.001	-

General Inorganics

pH - Manual	pH Units	N/A	MCERTS	6.2	-	-	-
pH - Automated	pH Units	N/A	MCERTS	-	7.5	7.0	U/S
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.029	0.010	0.010	0.13
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	-	-	0.064	-
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.12	0.071	-	0.15

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.62	0.94	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.26	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.1	1.9	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.87	1.7	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.59	1.2	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.57	1.0	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.76	1.5	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.26	0.41	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.62	1.1	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.31	0.59	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.21	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.40	0.80	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	6.05	11.5	< 0.80

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073077	2073078	2073079	2073080
Sample Reference				WS01	WS03	WS05	WS08
Sample Number				1	1	1	1
Depth (m)				0.60	0.20	0.40	0.60
Date Sampled				02/11/2021	02/11/2021	01/11/2021	01/11/2021
Time Taken				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	3.1	24	19	4.8
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.17	1.1	0.98	0.23
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8	0.8	0.5	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	1.5	2.2
Chromium (III)	mg/kg	1	NONE	2.8	21	24	8.3
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	3.7	22	25	10
Copper (aqua regia extractable)	mg/kg	1	MCERTS	8.7	52	54	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	120	160	25
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.5	< 0.3	0.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	4.7	22	24	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	4.3	34	29	8.3
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	40	99	170	32

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-

TPH Total C5 - C44	mg/kg	10	NONE	-	-	-	-

VOCs

Chloromethane	µg/kg	1	ISO 17025	-	-	-	-
Chloroethane	µg/kg	1	NONE	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073077	2073078	2073079	2073080
Sample Reference				WS01	WS03	WS05	WS08
Sample Number				1	1	1	1
Depth (m)				0.60	0.20	0.40	0.60
Date Sampled				02/11/2021	02/11/2021	01/11/2021	01/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-
Tribromomethane	µg/kg	1	NONE	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-

VOCs TICs

VOCs TICs Compound Name		N/A	NONE	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073077	2073078	2073079	2073080
Sample Reference				WS01	WS03	WS05	WS08
Sample Number				1	1	1	1
Depth (m)				0.60	0.20	0.40	0.60
Date Sampled				02/11/2021	02/11/2021	01/11/2021	01/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
SVOCs							
Aniline	mg/kg	0.1	NONE	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073077	2073078	2073079	2073080
Sample Reference				WS01	WS03	WS05	WS08
Sample Number				1	1	1	1
Depth (m)				0.60	0.20	0.40	0.60
Date Sampled				02/11/2021	02/11/2021	01/11/2021	01/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
SVOCs TICs							
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-

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

Analytical Report Number: 21-21073
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2073074	TP12	0.30	137	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
2073079	WS05	0.40	100	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 21-21073
Project / Site name: Rochdale Passivhaus

* 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 *
2073072	TP10	1	0.1	Brown loam with vegetation.
2073073	TP11	1	0.5	Brown loam and clay with vegetation.
2073074	TP12	1	0.3	Brown loam and clay with vegetation.
2073075	TP13	1	0.3	Brown loam and clay with stones and vegetation.
2073076	TP14	1	0.4	Brown loam and clay with stones and vegetation.
2073077	WS01	1	0.6	Brown loam and clay with vegetation.
2073078	WS03	1	0.2	Brown loam and clay with vegetation.
2073079	WS05	1	0.4	Brown loam and clay with brick and vegetation.
2073080	WS08	1	0.6	Brown loam and clay with vegetation.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 21-21073
Project / Site name: Rochdale Passivhaus

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE

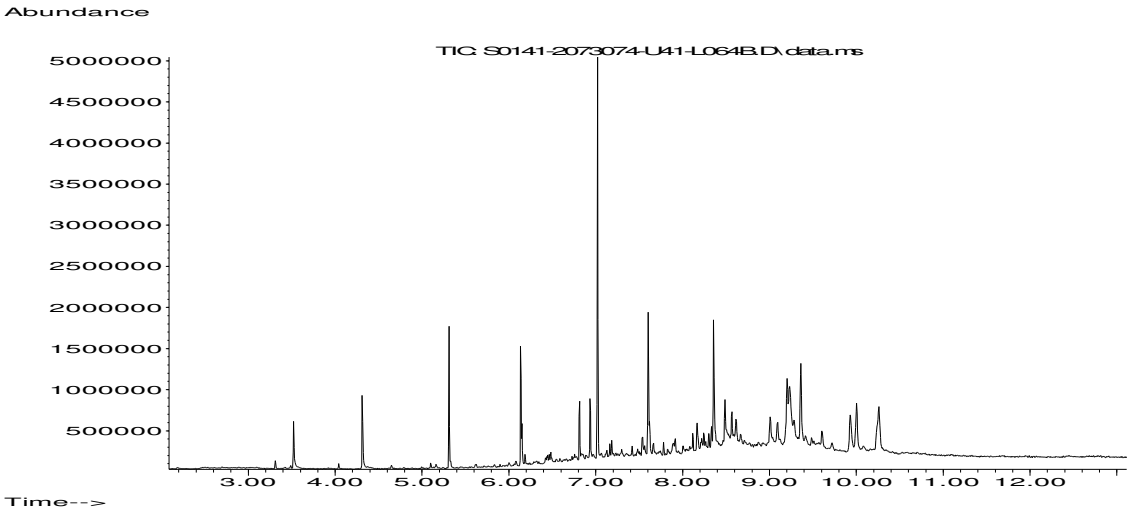
Analytical Report Number : 21-21073
Project / Site name: Rochdale Passivhaus

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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	D	MCERTS

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.


Abundance
TIC: S0141-2073074-U41-L064B.D\data.ms
5000000
4500000
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
Time-->

Jason Bradley
Hydrock Consultants Ltd
4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY

t: 01782 261919
f: 01782 262020
e: JasonBradley@hydrock.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 21-21169

Project / Site name:	Rochdale Passivhaus	**Samples received on:**	05/11/2021
Your job number:	C-19522	**Samples instructed on/ Analysis started on:**	05/11/2021
Your order number:	PO11375	**Analysis completed by:**	12/11/2021
Report Issue Number:	1	**Report issued on:**	12/11/2021
Samples Analysed:	3 soil samples		

Signed:

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

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

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

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

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

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

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-21169
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073502	2073503	2073504
Sample Reference				TP01	TP03	TP05
Sample Number				1	1	1
Depth (m)				0.15	0.30	0.15
Date Sampled				03/11/2021	03/11/2021	03/11/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	14
Moisture Content	%	0.01	NONE	21	33	19
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.4	6.7	7.5
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.012	0.11	0.032
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.061	-	0.055
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	0.067	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.6	0.87	0.79
Anthracene	mg/kg	0.05	MCERTS	0.37	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	2.9	1.5	1.6
Pyrene	mg/kg	0.05	MCERTS	2.7	1.4	1.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.7	1.0	0.95
Chrysene	mg/kg	0.05	MCERTS	1.5	0.86	0.87
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.9	1.1	1.0
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.86	0.50	0.53
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.8	0.91	0.95
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.83	0.47	0.47
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.30	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.92	0.60	0.59

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	17.3	9.22	9.17

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	28	27	21
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3	1.2	0.90
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8	0.3	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	26	23	24
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	24	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	81	65	54
Lead (aqua regia extractable)	mg/kg	1	MCERTS	170	160	130
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	0.7	1.0
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	25	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	34	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	150	110	99

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 21-21169
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073502	2073503	2073504
Sample Reference				TP01	TP03	TP05
Sample Number				1	1	1
Depth (m)				0.15	0.30	0.15
Date Sampled				03/11/2021	03/11/2021	03/11/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	1	MCERTS	-	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	< 10	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	< 10	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	4.8	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	24	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	38	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	38	-
TPH Total C5 - C44	mg/kg	10	NONE	-	38	-
VOCs						
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	-
Chloroethane	µg/kg	1	NONE	-	< 1.0	-
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	-
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	-
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	-
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	-
Benzene	µg/kg	1	MCERTS	-	< 1.0	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 21-21169
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073502	2073503	2073504
Sample Reference				TP01	TP03	TP05
Sample Number				1	1	1
Depth (m)				0.15	0.30	0.15
Date Sampled				03/11/2021	03/11/2021	03/11/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	-
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	-
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	-
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	-
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	-
Styrene	µg/kg	1	MCERTS	-	< 1.0	-
Tribromomethane	µg/kg	1	NONE	-	< 1.0	-
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	-
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-

VOCs TICs

VOCs TICs Compound Name		N/A	NONE	-	ND	-

SVOCs

Aniline	mg/kg	0.1	NONE	-	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 21-21169
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073502	2073503	2073504
Sample Reference				TP01	TP03	TP05
Sample Number				1	1	1
Depth (m)				0.15	0.30	0.15
Date Sampled				03/11/2021	03/11/2021	03/11/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	< 0.1	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	-
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	-
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-
Phenanthrene	mg/kg	0.05	MCERTS	-	0.87	-
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	-	< 0.3	-
Fluoranthene	mg/kg	0.05	MCERTS	-	1.5	-
Pyrene	mg/kg	0.05	MCERTS	-	1.4	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	1.0	-
Chrysene	mg/kg	0.05	MCERTS	-	0.86	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	1.1	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	0.50	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	0.91	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.47	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.60	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 21-21169
Project / Site name: Rochdale Passivhaus
Your Order No: PO11375

Lab Sample Number				2073502	2073503	2073504
Sample Reference				TP01	TP03	TP05
Sample Number				1	1	1
Depth (m)				0.15	0.30	0.15
Date Sampled				03/11/2021	03/11/2021	03/11/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
SVOCs TICs						
SVOCs TICs Compound Name		N/A	NONE	-	Benzo[e]pyrene	-
SVOC % Match	%	N/A	NONE	-	98	-
SVOCs TICs Compound Name		N/A	NONE	-	Eicosane	-
SVOC % Match	%	N/A	NONE	-	96	-
SVOCs TICs Compound Name		N/A	NONE	-	Tricyclo[3.3.3.0(1,5)]undec-6-ene-2,3,6-tricarbonitrile	-
SVOC % Match	%	N/A	NONE	-	96	-
SVOCs TICs Compound Name		N/A	NONE	-	.gamma.-Sitosterol	-
SVOC % Match	%	N/A	NONE	-	95	-
SVOCs TICs Compound Name		N/A	NONE	-	Cyclohexadecane	-
SVOC % Match	%	N/A	NONE	-	93	-
SVOCs TICs Compound Name		N/A	NONE	-	Diphenylethyne	-
SVOC % Match	%	N/A	NONE	-	92	-
SVOCs TICs Compound Name		N/A	NONE	-	Pyridine-3-carboxamide, oxime, N-(2-trifluoromethylphenyl)-	-
SVOC % Match	%	N/A	NONE	-	92	-

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 21-21169
Project / Site name: Rochdale Passivhaus

* 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 *
2073502	TP01	1	0.15	Brown loam and clay with gravel and fibres.
2073503	TP03	1	0.3	Brown loam and clay with vegetation and plastic.
2073504	TP05	1	0.15	Brown loam and clay with stones and vegetation.

Analytical Report Number : 21-21169
Project / Site name: Rochdale Passivhaus

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

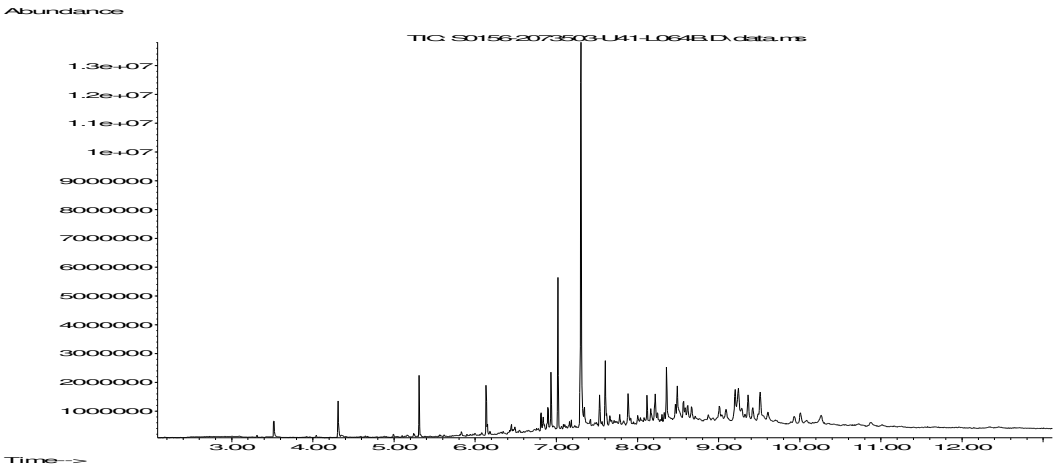
Analytical Report Number : 21-21169
Project / Site name: Rochdale Passivhaus

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
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	D	MCERTS

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.


Abundance
TIC: S0156-2073503-U41-L064B.D\data.ms
1.3e+07
1.2e+07
1.1e+07
1e+07
9000000
8000000
7000000
6000000
5000000
4000000
3000000
2000000
1000000
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
Time-->

Jason Bradley
Hydrock Consultants Ltd
4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY

t: 01782 261919
f: 01782 262020
e: JasonBradley@hydrock.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 22-33115

Project / Site name:	Rochdale Passivhaus	**Samples received on:**	14/01/2022
Your job number:	C 19522	**Samples instructed on/ Analysis started on:**	14/01/2022
Your order number:	PO13328	**Analysis completed by:**	21/01/2022
Report Issue Number:	1	**Report issued on:**	21/01/2022
Samples Analysed:	1 water sample		

Signed:

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

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

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

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

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

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

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 22-33115
Project / Site name: Rochdale Passivhaus

Lab Sample Number				2137379
Sample Reference				BH102
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				13/01/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	

General Inorganics

pH	pH Units	N/A	ISO 17025	7.0
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	430
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0
Sulphate as SO4	µg/l	45	ISO 17025	24100
Chloride	mg/l	0.15	ISO 17025	5.5
Fluoride	µg/l	50	ISO 17025	88
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	390
Ammoniacal Nitrogen as NH3	µg/l	15	ISO 17025	470
Ammoniacal Nitrogen as NH4	µg/l	15	ISO 17025	500
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	21.7
Nitrate as N	mg/l	0.01	ISO 17025	1.14
Nitrate as NO3	mg/l	0.05	ISO 17025	5.07
Nitrite as N	µg/l	1	ISO 17025	12
Nitrite as NO2	µg/l	5	ISO 17025	39

Hardness - Total	mgCaCO3/l	1	ISO 17025	247
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	3.1

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.001	NONE	< 0.001
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01

PAH Sums

Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.020
Sum of Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.02	NONE	< 0.020
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benz	µg/l	0.04	NONE	< 0.040

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-33115
Project / Site name: Rochdale Passivhaus

Lab Sample Number				2137379
Sample Reference				BH102
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				13/01/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Boron (dissolved)	µg/l	10	ISO 17025	32
Calcium (dissolved)	mg/l	0.012	ISO 17025	91
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0
Chromium (III)	µg/l	5	NONE	< 5.0
Iron (dissolved)	mg/l	0.004	ISO 17025	0.18
Iron (dissolved)	µg/l	4	ISO 17025	180
Magnesium (dissolved)	mg/l	0.005	ISO 17025	4.9
Sodium (dissolved)	mg/l	0.01	ISO 17025	55
Aluminium (dissolved)	µg/l	1	ISO 17025	21
Antimony (dissolved)	µg/l	0.4	ISO 17025	0.7
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.84
Barium (dissolved)	µg/l	0.06	ISO 17025	98
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.15
Chromium (dissolved)	µg/l	0.2	ISO 17025	2.9
Cobalt (dissolved)	µg/l	0.2	ISO 17025	2.6
Copper (dissolved)	µg/l	0.5	ISO 17025	6.7
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	1300
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	7.1
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6
Silver (dissolved)	µg/l	0.05	NONE	< 0.05
Tin (dissolved)	µg/l	0.2	ISO 17025	0.22
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.5
Zinc (dissolved)	µg/l	0.5	ISO 17025	8.5
Monoaromatics & Oxygenates				
Benzene	µg/l	1	ISO 17025	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0
Sum of m, p & o-Xylene	µg/l	2	ISO 17025	< 2.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-33115
Project / Site name: Rochdale Passivhaus

Lab Sample Number				2137379
Sample Reference				BH102
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				13/01/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C16 - C35 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C35 - C44 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic (C5 - C44) HS+EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C35 - C44 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic (C5 - C44) HS+EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG Total C5 - C44 EH+HS_1D_TOTAL_#1_#2_MS	µg/l	10	NONE	< 10
VOCs				
Chloromethane	µg/l	1	ISO 17025	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-33115
Project / Site name: Rochdale Passivhaus

Lab Sample Number				2137379
Sample Reference				BH102
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				13/01/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0

Dichloromethane	µg/l	3	NONE	< 3.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0
Total Trihalomethanes	µg/l	4	NONE	< 4.0
Total Trichlorobenzenes	ug/l	3	NONE	< 3.0
Total Dichlorobenzenes	ug/l	3	NONE	< 3.0
Trichloroethylene (TCE) + Tetrachloroethylene (PCE)	ug/l	2	NONE	< 2.0
Total 1,2-Dichloroethene	ug/l	2	NONE	< 2.0
Total 1,3-Dichloropropane	ug/l	2	NONE	< 2.0
Tetrachloroethane	ug/l	2	NONE	< 2.0

VOCs TICs

VOCs TICs Compound Name		10	NONE	ND

SVOCs

Aniline	µg/l	0.05	NONE	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-33115
Project / Site name: Rochdale Passivhaus

Lab Sample Number				2137379
Sample Reference				BH102
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				13/01/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
2-Methylphenol	µg/l	0.05	NONE	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01

3&4-Methylphenol	µg/l	0.1	NONE	< 0.10

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-33115
Project / Site name: Rochdale Passivhaus

Lab Sample Number				2137379
Sample Reference				BH102
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				13/01/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
SVOCs TICs				
SVOCs TICs Compound Name		N/A	NONE	ND

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 22-33115
Project / Site name: Rochdale Passivhaus

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE

Analytical Report Number : 22-33115
Project / Site name: Rochdale Passivhaus

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Speciated EPA-16 PAHs in water (LOW LEVEL Dets)	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270 (low level)	L102B-PL	W	NONE
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
Ammonia as NH3 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
TPH Chromatogram in Water	TPH Chromatogram in Water.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
Free cyanide (low level) in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Bromate in Water	Determination of bromate in waters based on ion chromatography. Accredited matrices GW, PW, SW.	In house method based on Standard Methods for the Analysis of Water and Waste Water, method 4500	L008-PL	W	ISO 17025
Specific PAH sums in water	Determination of PAH compounds in water by extraction in hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE

Analytical Report Number : 22-33115
Project / Site name: Rochdale Passivhaus

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Chloride in water	Determination of Chloride (diissolved) colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025

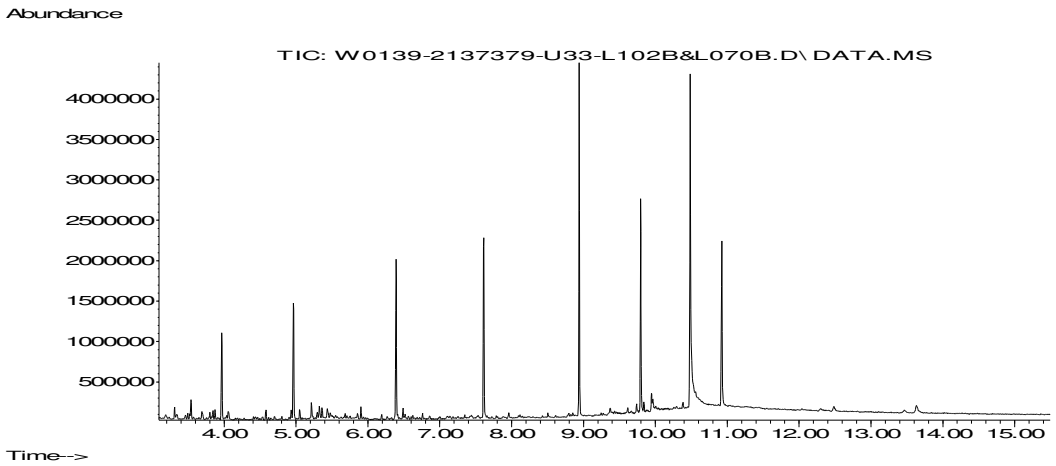
For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total


Abundance
TIC: W0139-2137379-U33-L102B&L070B.D\ DATA.MS
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
13.00
14.00
15.00
Time-->

Sample Deviation Report

Analytical Report Number : 22-33115
Project / Site name: Rochdale Passivhaus

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH102	None Supplied	W	2137379	c	Ammonia as NH3 in water	L082-PL	c
BH102	None Supplied	W	2137379	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH102	None Supplied	W	2137379	c	Ammonium as NH4 in water	L082-PL	c
BH102	None Supplied	W	2137379	c	Electrical conductivity at 20oC of water	L031-PL	c
BH102	None Supplied	W	2137379	c	pH at 20oC in water (automated)	L099-PL	c

Key: **a** - No sampling date **b** - Incorrect container
c - Holding time **d** - Headspace **e** - Temperature

Statistical Analysis

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated

Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US_{95}	Result of Significance Test													
								Soil Type	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**
								Location & Depth	**TP01**	**TP03**	**TP05**	**TP10**	**TP11**	**TP12**	**TP13**	**TP14**	**WS03**	**WS05**	**TP103**	**TP104**	**CPT101**
									0.15	**0.30**	**0.15**	**0.10**	**0.50**	**0.30**	**0.30**	**0.40**	**0.20**	**0.40**	**0.30-0.70**	**0.5**	**0.25**
Arsenic	1	13	12.5	35	0	37	30.82992	POTENTIALLY SUITABLE FOR USE	28	27	21	15	14	19	26	35	24	19	30	12.5	25
Beryllium	0.06	13	0.74	1.7	0	73	1.542384	POTENTIALLY SUITABLE FOR USE	1.3	1.2	0.9	0.74	0.77	0.85	1.2	1.6	1.1	0.98	1.7	1.3	1.5
Boron	0.2	13	0.2	1.2	0	300	0.97884	POTENTIALLY SUITABLE FOR USE	0.8	0.3	0.3	0.8	0.5	0.5	0.8	0.8	0.8	0.5	0.8	0.2	1.2
Cadmium	0.2	13	0.1	0.6	0	14	0.462303	POTENTIALLY SUITABLE FOR USE	0.2	0.2	0.2	0.2	0.6	0.6	0.2	0.2	0.2	0.2	0.1	0.1	0.4
Chromium (III)	1	13	16	52.9	0	890	40.16038	POTENTIALLY SUITABLE FOR USE	26	23	24	16	20	18	23	21	21	24	48.5	28.5	52.9
Chromium (VI)	1.2	13	1.2	1.5	0	6.1	1.323692	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.2	1.2	1.2
Copper	1	13	32	108	0	2500	90.151	POTENTIALLY SUITABLE FOR USE	81	65	54	52	51	54	79	92	52	54	108	32	74
Lead	1	13	67	210	1	200	189.197	POTENTIALLY SUITABLE FOR USE	170	160	130	110	150	120	210	190	120	160	120	67	161
Mercury, inorganic	0.3	13	0.1	1	0	170	0.74893	POTENTIALLY SUITABLE FOR USE	0.6	0.7	1	0.5	0.3	0.3	0.3	0.6	0.5	0.3	0.1	0.1	0.5
Nickel	1	13	17	65.1	0	130	42.74702	POTENTIALLY SUITABLE FOR USE	28	25	19	17	23	22	32	36	22	24	65.1	21.4	27.4
Selenium	1	13	1	1	0	360	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1
Vanadium	1	13	23	52	0	410	42.60428	POTENTIALLY SUITABLE FOR USE	38	34	26	23	29	28	39	52	34	29	36	31	38
Zinc	1	13	91	253	0	3900	213.2629	POTENTIALLY SUITABLE FOR USE	150	110	99	91	200	140	230	160	99	170	253	103	148
Cyanide (free)	1	13	1	1	0	790	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1
Phenol (total)	1	13	1	1	0	1100	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1
Acenaphthene	0.05	13	0.05	0.13	0	1100	0.088211	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.09	0.05	0.13
Acenaphthylene	0.05	13	0.05	0.05	0	940	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Anthracene	0.05	13	0.05	0.47	0	11000	0.373095	POTENTIALLY SUITABLE FOR USE	0.37	0.05	0.05	0.19	0.23	0.34	0.05	0.47	0.05	0.26	0.22	0.12	0.28
Benz(a)anthracene	0.05	13	0.59	2.3	0	8.6	1.690827	POTENTIALLY SUITABLE FOR USE	1.7	1	0.95	0.92	1.3	1.1	1.2	2.3	0.59	1.2	0.88	0.7	1.17
Benzo(a)pyrene	0.05	13	0.52	1.8	1	1.5	1.418704	POTENTIALLY SUITABLE FOR USE	1.8	0.91	0.95	0.61	1.2	1	1.2	1.3	0.62	1.1	0.81	0.52	1.06
Benzo(b)fluoranthene	0.05	13	0.76	1.9	0	10	1.650062	POTENTIALLY SUITABLE FOR USE	1.9	1.1	1	0.77	1.3	1.4	1.3	1.6	0.76	1.5	1.26	0.83	1.39
Benzo(ghi)perylene	0.05	13	0.32	0.92	0	71	0.816093	POTENTIALLY SUITABLE FOR USE	0.92	0.6	0.59	0.46	0.7	0.62	0.74	0.74	0.4	0.8	0.53	0.32	0.57
Benzo(k)fluoranthene	0.05	13	0.26	0.93	0	15	0.764181	POTENTIALLY SUITABLE FOR USE	0.86	0.5	0.53	0.48	0.61	0.36	0.61	0.93	0.26	0.41	0.49	0.32	0.54
Chrysene	0.05	13	0.57	1.5	0	13	1.301475	POTENTIALLY SUITABLE FOR USE	1.5	0.86	0.87	0.77	1.1	1	1	1.4	0.57	1	0.94	0.71	1.14
Dibenz(a,h)anthracene	0.05	13	0.05	0.3	0	1.4	0.235981	POTENTIALLY SUITABLE FOR USE	0.3	0.05	0.05	0.05	0.05	0.05	0.21	0.25	0.05	0.21	0.16	0.1	0.13
Fluoranthene	0.05	13	1.1	3.5	0	900	2.719801	POTENTIALLY SUITABLE FOR USE	2.9	1.5	1.6	1.8	2.1	2	1.8	3.5	1.1	1.9	1.77	1.26	2.04
Fluorene	0.05	13	0.05	0.08	0	880	0.065464	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.05	0.08
Indeno(1,2,3,cd)pyrene	0.05	13	0.31	0.83	0	6.2	0.729006	POTENTIALLY SUITABLE FOR USE	0.83	0.47	0.47	0.44	0.65	0.5	0.63	0.7	0.31	0.59	0.62	0.42	0.65
Naphthalene	0.05	13	0.05	0.13	0	12	0.088211	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.09	0.05	0.13
Phenanthrene	0.05	13	0.52	1.6	0	440	1.30583	POTENTIALLY SUITABLE FOR USE	1.6	0.87	0.79	0.79	0.9	1.3	0.7	1.2	0.62	0.94	0.86	0.52	1.17
Pyrene	0.05	13	0.87	2.9	0	2000	2.373277	POTENTIALLY SUITABLE FOR USE	2.7	1.4	1.4	1.5	1.8	1.7	1.6	2.9	0.87	1.7	1.55	1.03	1.8
Asbestos identified	Y/N								N	N	N	N	N	Y	N	N	N	Y	N	N	N
FOC (dimensionless)	0.064462	**(mean)**							0.061	0.067	0.055	0.064	0.059	0.056	0.065	0.07	0.071	0.064	0.091	0.015	0.1
SOM (calculated)	11.11%	**(mean)**							10.52%	11.55%	9.48%	11.03%	10.17%	9.65%	11.21%	12.07%	12.24%	11.03%	15.69%	2.59%	17.24%
pH (su)	7.1	**(mean)**							7.4	6.7	7.5	6.6	6.5	6.7	7.6	7.5	7.5	7	7.18	6.94	6.67

Risk parameter: **Human health - residential with plant uptake (6%SOM)**
Data set: Made Ground
Client: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no.: C-19522
Lab. report no(s).: 21-21169-1, 21-21073-2 & 20/6723

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

Hydrock

All values in mg/kg unless otherwise stated

Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US_{95}	Result of Significance Test													
								Soil Type	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**	**MG**
								Location & Depth	**TP01**	**TP03**	**TP05**	**TP10**	**TP11**	**TP12**	**TP13**	**TP14**	**WS03**	**WS05**	**TP103**	**TP104**	**CPT101**
									0.15	**0.30**	**0.15**	**0.10**	**0.50**	**0.30**	**0.30**	**0.40**	**0.20**	**0.40**	**0.30-0.70**	**0.5**	**0.25**
Arsenic	1	13	12.5	35	0	250	30.82992	POTENTIALLY SUITABLE FOR USE	28	27	21	15	14	19	26	35	24	19	30	12.5	25
Boron	0.2	13	0.2	1.2	0	3	0.97884	POTENTIALLY SUITABLE FOR USE	0.8	0.3	0.3	0.8	0.5	0.5	0.8	0.8	0.8	0.5	0.8	0.2	1.2
Chromium (III)	1	13	16	52.9	0	400	40.16038	POTENTIALLY SUITABLE FOR USE	26	23	24	16	20	18	23	21	21	24	48.5	28.5	52.9
Chromium (VI)	1.2	13	1.2	1.5	0	25	1.323692	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.2	1.2	1.2
Copper	1	13	32	108	0	135	90.151	POTENTIALLY SUITABLE FOR USE	81	65	54	52	51	54	79	92	52	54	108	32	74
Nickel	1	13	17	65.1	0	75	42.74702	POTENTIALLY SUITABLE FOR USE	28	25	19	17	23	22	32	36	22	24	65.1	21.4	27.4
Zinc	1	13	91	253	0	300	213.2629	POTENTIALLY SUITABLE FOR USE	150	110	99	91	200	140	230	160	99	170	253	103	148
	Mean																				
pH (su)	7.1								7.4	6.7	7.5	6.6	6.5	6.7	7.6	7.5	7.5	7	7.18	6.94	6.67

Risk parameter: **Plant life pH 7**
Data set: Made Ground
Client: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no.: C-19522
Lab. report no(s).: 21-21169-1, 21-21073-2 & 20/6723

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	Peat	Peat	Peat	Peat								
All values in mg/kg unless otherwise stated						Location & Depth	WS01	WS08	TP101	TP102								
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.60**	**0.60**	**1.5**	**1**								
Arsenic	1	4	2.1	13.2	0	37	3.1	4.8	13.2	2.1								
Beryllium	0.06	4	0.17	1	0	73	0.17	0.23	1	1								
Boron	0.2	4	0.8	1.4	0	300	0.8	1.4	1.4	1.1								
Cadmium	0.2	4	0.2	0.2	0	14	0.2	0.2	0.2	0.2								
Chromium (III)	1	4	2.8	14.6	0	890	2.8	8.3	14.6	4.2								
Chromium (VI)	1.2	4	1.2	2.2	0	6.1	1.2	2.2	1.2	1.2								
Copper	1	4	8.7	35	0	2500	8.7	17	35	12								
Lead	1	4	10	72	0	200	16	25	72	10								
Mercury, inorganic	0.3	4	0.2	0.4	0	170	0.3	0.4	0.3	0.2								
Nickel	1	4	4.7	14.8	0	130	4.7	11	14.8	7.4								
Selenium	1	4	1	3	0	360	1	1	3	2								
Vanadium	1	4	3	18	0	410	4.3	8.3	18	3								
Zinc	1	4	10	60	0	3900	40	32	60	10								
Cyanide (free)	1	4	1	1	0	790	1	1	1	1								
Phenol (total)	1	4	1	1	0	1100	1	1	1	1								
Acenaphthene	0.05	4	0.05	0.05	0	1100	0.05	0.05	0.05	0.05								
Acenaphthylene	0.05	4	0.05	0.05	0	940	0.05	0.05	0.05	0.05								
Anthracene	0.05	4	0.05	0.05	0	11000	0.05	0.05	0.05	0.05								
Benz(a)anthracene	0.05	4	0.05	0.74	0	8.6	0.05	0.05	0.74	0.05								
Benzo(a)pyrene	0.05	4	0.05	0.54	0	1.5	0.05	0.05	0.54	0.05								
Benzo(b)fluoranthene	0.05	4	0.05	6.2	0	10	0.05	0.05	6.2	0.05								
Benzo(ghi)perylene	0.05	4	0.05	0.29	0	71	0.05	0.05	0.29	0.05								
Benzo(k)fluoranthene	0.05	4	0.05	0.28	0	15	0.05	0.05	0.28	0.05								
Chrysene	0.05	4	0.05	0.62	0	13	0.05	0.05	0.62	0.05								
Dibenz(a,h)anthracene	0.05	4	0.05	0.05	0	1.4	0.05	0.05	0.05	0.05								
Fluoranthene	0.05	4	0.05	1.03	0	900	0.05	0.05	1.03	0.05								
Fluorene	0.05	4	0.05	0.05	0	880	0.05	0.05	0.05	0.05								
Indeno(1,2,3,cd)pyrene	0.05	4	0.05	0.41	0	6.2	0.05	0.05	0.41	0.05								
Naphthalene	0.05	4	0.04	0.05	0	12	0.05	0.05	0.04	0.05								
Phenanthrene	0.05	4	0.05	0.05	0	440	0.05	0.05	0.05	0.05								
Pyrene	0.05	4	0.05	0.91	0	2000	0.05	0.05	0.91	0.05								
Asbestos identified	Y/N						N	N	N	N								
FOC (dimensionless)	0.26025	**(mean)**					0.12	0.15	0.284	0.487								
SOM (calculated)	44.87%	**(mean)**					20.69%	25.86%	48.96%	83.96%								
pH (su)	5.6	**(mean)**					6.2	U/S	5.12	5.37								

Risk parameter: **Human health - residential with plant uptake (6%SOM)**
Data set: Peat
Client: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no.: C-19522
Lab. report no(s).: 21-21073-2 & 20/6723

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

Hydrock

						Soil Type	Peat	Peat	Peat	Peat								
All values in mg/kg unless otherwise stated						Location & Depth	WS01	WS08	TP101	TP102								
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.60**	**0.60**	**1.5**	**1**								
Arsenic	1	4	2.1	13.2	0	250	3.1	4.8	13.2	2.1								
Boron	0.2	4	0.8	1.4	0	3	0.8	1.4	1.4	1.1								
Chromium (III)	1	4	2.8	14.6	0	400	2.8	8.3	14.6	4.2								
Chromium (VI)	1.2	4	1.2	2.2	0	25	1.2	2.2	1.2	1.2								
Copper	1	4	8.7	35	0	135	8.7	17	35	12								
Nickel	1	4	4.7	14.8	0	75	4.7	11	14.8	7.4								
Zinc	1	4	10	60	0	300	40	32	60	10								
	Mean																	
pH (su)	5.6						6.2	U/S	5.12	5.37								

Risk parameter: **Plant life pH 7**
Data set: Peat
Client: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no.: C-19522
Lab. report no(s).: 21-21073-2 & 20/6723

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

All values in mg/kg unless otherwise stated

Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC													
						Soil Type	MG	MG	Peat	Peat	MG	MG	MG						
						Location & Depth	TP03	TP12	TP101	TP102	TP103	TP104	CPT101						
							0.3	0.3	1.5	1	0.30-0.70	0.5	0.25						
Aliphatics EC5-EC6	0.001	7	0.001	1	0	160	0.001	0.001	1	1	0.1	0.1	0.1						
Aliphatics >EC6-EC8	0.001	7	0.001	1	0	530	0.001	0.001	1	1	0.1	0.1	0.1						
Aliphatics >EC8-EC10	0.001	7	0.001	8.1	0	150	0.001	0.001	1	8.1	0.1	0.1	0.1						
Aliphatics >EC10-EC12	1	7	0.2	22.9	0	280	1	1	0.2	22.9	0.2	0.2	0.2						
Aliphatics >EC12-EC16	2	7	2	48	0	140	2	2	4	48	4	4	4						
Aliphatics >EC16-EC35	10	7	10	554	0	110000	10	10	235	554	50	14	94						
Aliphatics >EC35-EC44	8.4	2	8.4	8.4	0	110000	8.4	8.4											
Aromatics EC5-EC7	0.001	7	0.001	1	0	310	0.001	0.001	1	1	0.1	0.1	0.1						
Aromatics >EC7-EC8	0.001	7	0.001	1	0	680	0.001	0.001	1	1	0.1	0.1	0.1						
Aromatics >EC8-EC10	0.001	7	0.001	1	0	190	0.001	0.001	1	1	0.1	0.1	0.1						
Aromatics >EC10-EC12	1	7	0.2	1	0	390	1	1	0.2	0.2	0.2	0.2	0.2						
Aromatics >EC12-EC16	2	7	4	24	0	670	4.8	5.9	4	24	5	4	4						
Aromatics >EC16-EC21	10	7	7	48	0	930	10	12	7	48	20	10	21						
Aromatics >EC21-EC35	10	7	24	1260	0	1700	24	27	792	1260	163	76	230						
Aromatics >EC35-EC44	8.4	2	8.4	8.4	0	1700	8.4	8.4											

	ADDITIVITY CHECK	HAZARD QUOTIENTS FOR EACH FRACTION												
	Aliphatics EC5-EC6	0.000	0.000	0.006	0.006	0.001	0.001	0.001						
	Aliphatics >EC6-EC8	0.000	0.000	0.002	0.002	0.000	0.000	0.000						
Considered additive	Aliphatics >EC8-EC10	0.000	0.000	0.007	0.054	0.001	0.001	0.001						
	Aliphatics >EC10-EC12	0.004	0.004	0.001	0.082	0.001	0.001	0.001						
	Aliphatics >EC12-EC16	0.014	0.014	0.029	0.343	0.029	0.029	0.029						
	Aliphatics >EC16-EC35	0.000	0.000	0.002	0.005	0.000	0.000	0.001						
	Aliphatics >EC35-EC44	0.000	0.000											
	Aromatics EC5-EC7	0.000	0.000	0.003	0.003	0.000	0.000	0.000						
	Aromatics >EC7-EC8	0.000	0.000	0.001	0.001	0.000	0.000	0.000						
Considered additive	Aromatics >EC8-EC10	0.000	0.000	0.005	0.005	0.001	0.001	0.001						
	Aromatics >EC10-EC12	0.003	0.003	0.001	0.001	0.001	0.001	0.001						
	Aromatics >EC12-EC16	0.007	0.009	0.006	0.036	0.007	0.006	0.006						
	Aromatics >EC16-EC21	0.011	0.013	0.008	0.052	0.022	0.011	0.023						
Considered additive	Aromatics >EC21-EC35	0.014	0.016	0.466	0.741	0.096	0.045	0.135						
	Aromatics >EC35-EC44	0.005	0.005											
	Hazard Index for ali>C8-C16	**0.018**	**0.018**	**0.036**	**0.479**	**0.030**	**0.030**	**0.030**						
	Hazard Index for aro>C8-C16	**0.010**	**0.011**	**0.012**	**0.042**	**0.009**	**0.007**	**0.007**						
	Hazard Index for aro>C16-C35	**0.025**	**0.029**	**0.473**	**0.793**	**0.117**	**0.055**	**0.158**						

Risk parameter: **Human health - residential with plant uptake (6%SOM)**
Data set: All
Client: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no.: C-19522
Lab. report no(s).: 21-21169-1, 21-21073-2 & 20/6723

Legend: Hazard Index table - HI or HQ greater than 1 highlighted with yellow shading.
Main table values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Main table alues in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

						Soil Type	MG	MG	Peat	Peat	MG	MG	MG					
All values in mg/kg unless otherwise stated						Location & Depth	TP03	TP12	TP101	TP102	TP103	TP104	CPT101					
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.3**	**0.3**	**1.5**	**1**	**0.30-0.70**	**0.5**	**0.25**					
Benzene	0.001	7	0.001	0.01	0	0.42	0.001	0.001	0.01	0.005	0.005	0.005	0.005					
Toluene	0.001	7	0.001	0.006	0	680	0.001	0.001	0.006	0.003	0.003	0.003	0.003					
Ethylbenzene	0.001	7	0.001	0.006	0	410	0.001	0.001	0.006	0.003	0.003	0.003	0.003					
Xylene, o-	0.001	7	0.001	0.008	0	320	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
Xylene, m- & p-	0.001	7	0.001	0.008	0	300	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
MTBE	0.001	7	0.001	0.012	0	210	0.001	0.001	0.012	0.006	0.006	0.006	0.006					
Iso-propylbenzene	0.001	7	0.001	0.029	0	89	0.001	0.001	0.006	0.029	0.003	0.003	0.003					
Propylbenzene	0.001	7	0.001	0.008	0	260	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
1,2,4-Trimethylbenzene	0.001	7	0.001	0.012	0	2.7	0.001	0.001	0.012	0.006	0.006	0.006	0.006					
Bromobenzene	0.001	7	0.001	0.004	0	6.6	0.001	0.001	0.004	0.002	0.002	0.002	0.002					
Chlorobenzene	0.001	7	0.001	0.008	0	2.4	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
1,2-Dichlorobenzene	0.001	7	0.001	0.008	0	130	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
1,3-Dichlorobenzene	0.001	7	0.001	0.008	0	2.3	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
1,4-Dichlorobenzene	0.001	7	0.001	0.008	0	220	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
Hexachlorobenzene	0.001	7	0.001	0.008	0	1.9	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
Pentachlorobenzene	0.001	2	0.001	0.001	0	22	0.001	0.001										
1,2,3-trichlorobenzene	0.001	7	0.001	0.014	0	8.6	0.001	0.001	0.014	0.007	0.007	0.007	0.007					
1,2,4-trichlorobenzene	0.001	7	0.001	0.014	0	15	0.001	0.001	0.014	0.007	0.007	0.007	0.007					
1,3,5-trichlorobenzene	0.001	2	0.001	0.001	0	1.9	0.001	0.001										
1,2,3,4-tetrachlorobenzene	0.001	2	0.001	0.001	0	78	0.001	0.001										
1,2,3,5-tetrachlorobenzene	0.001	2	0.001	0.001	0	3.7	0.001	0.001										
1,2,4,5-tetrachlorobenzene	0.001	2	0.001	0.001	0	1.6	0.001	0.001										

Risk parameter: **Human health - residential with plant uptake (6%SOM)**
Data set: All
Client: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no.: C-19522
Lab. report no(s).: 21-21169-1, 21-21073-2 & 20/6723

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

						Soil Type	MG	MG	Peat	Peat	MG	MG	MG					
All values in mg/kg unless otherwise stated						Location & Depth	TP03	TP12	TP101	TP102	TP103	TP104	CPT101					
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.3**	**0.3**	**1.5**	**1**	**0.30-0.70**	**0.5**	**0.25**					
Bromodichloromethane	0.001	7	0.001	0.008	0	0.082	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
Bromoform	0.001	7	0.001	0.008	0	16	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
Chloroethane	0.001	7	0.001	0.012	0	26	0.001	0.001	0.012	0.006	0.006	0.006	0.006					
Chloroethene (aka vinyl chloride)	0.001	7	0.001	0.004	5	0.0014	0.001	0.001	0.004	0.002	0.002	0.002	0.002					
Chloromethane	0.001	7	0.001	0.033	2	0.019	0.001	0.001	0.033	0.003	0.011	0.003	0.024					
1,1-Dichloroethane	0.001	7	7	7	0	11	0.001	0.001	0.012	0.006	0.006	0.006	0.006					
1,2-Dichloroethane	0.001	7	0.001	0.01	0	0.019	0.001	0.001	0.01	0.005	0.005	0.005	0.005					
1,1-Dichloroethene	0.001	7	0.001	0.012	0	1.2	0.001	0.001	0.012	0.006	0.006	0.006	0.006					
Cis 1,2 Dichloroethene	0.001	7	0.001	0.014	0	0.52	0.001	0.001	0.014	0.007	0.007	0.007	0.007					
Trans 1,2 Dichloroethene	0.001	7	0.001	0.006	0	0.98	0.001	0.001	0.006	0.003	0.003	0.003	0.003					
Dichloromethane	0.001	5	0.03	0.06	0	1.9			0.06	0.03	0.03	0.03	0.03					
1,2-Dichloropropane	0.001	7	0.001	0.008	0	0.12	0.001	0.001	0.008	0.004	0.004	0.004	0.004					
Hexachloroethane	0.05	2	0.05	0.05	0	1.6	0.05	0.05										
Tetrachloroethene	0.001	7	0.001	0.006	0	6.7	0.001	0.001	0.006	0.003	0.003	0.003	0.003					
1,1,1,2-Tetrachloroethane	0.001	7	0.001	0.01	0	6.5	0.001	0.001	0.01	0.005	0.005	0.005	0.005					
1,1,2,2-Tetrachloroethane	0.001	7	0.001	0.006	0	7.8	0.001	0.001	0.006	0.003	0.003	0.003	0.003					
Tetrachloromethane	0.001	2	0.001	0.001	0	0.13	0.001	0.001										
Trichloroethene	0.001	7	0.001	0.01	0	0.69	0.001	0.001	0.01	0.005	0.005	0.005	0.005					
1,1,1-Trichloroethane	0.001	7	0.001	0.01	0	39	0.001	0.001	0.01	0.005	0.005	0.005	0.005					
1,1,2 Trichloroethane	0.001	5	0.004	0.008	0	3.5			0.008	0.004	0.004	0.004	0.004					
Trichloromethane	0.001	2	0.001	0.001	0	3.6	0.001	0.001										

Risk parameter: **Human health - residential with plant uptake (6%SOM)**
Data set: All
Client: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no.: C-19522
Lab. report no(s).: 21-21169-1, 21-21073-2 & 20/6723

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

All values in mg/kg unless otherwise stated

Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC											
						Soil Type	MG	MG									
						Location & Depth	TP03	TP12									
							0.3	0.3									
2-Chlorophenol	0.1	2	0.1	0.1	0	20	0.1	0.1									
2,4-Dichlorophenol	0.3	2	0.3	0.3	0	4.7	0.3	0.3									
2,4-Dimethylphenol	0.3	2	0.3	0.3	0	100	0.3	0.3									
2-Methylphenol	0.3	2	0.3	0.3	0	430	0.3	0.3									
3-Methylphenol	0.01	0	0	0	0	420											
4-Methylphenol	0.2	2	0.2	0.2	0	420	0.2	0.2									
Pentachlorophenol	0.01	0	0	0	0	3.1											
2,3,4,6-Tetrachlorophenol	0.01	0	0	0	0	4.8											
2,4,6-Trichlorophenol	0.1	2	0.1	0.1	0	7.8	0.1	0.1									
Bis (2-ethylhexyl) phthalate	0.01	0	0	0	0	1300											
Butyl benzyl phthalate	0.3	2	0.3	0.3	0	7800	0.3	0.3									
Diethyl Phthalate	0.2	2	0.2	0.2	0	610	0.2	0.2									
Di-n-butyl phthalate	0.01	0	0	0	0	72											
Di-n-octyl phthalate	0.01	0	0	0	0	4300											

	ADDITIVITY CHECK	HAZARD QUOTIENTS FOR EACH SUBSTANCE	
Considered additive (chlorophenols)	2-Chlorophenol	0.005	0.005
	2,4-Dichlorophenol	0.06383	0.06383
	2,3,4,6-Tetrachlorophenol		
	2,4,6-Trichlorophenol	0.012821	0.012821
Considered additive (cresols)	2-Methylphenol	0.000698	0.000698
	3-Methylphenol		
	4-Methylphenol	0.000476	0.000476
	Hazard Index for chlorophenols		
	Hazard Index for cresols		

Risk parameter: **Human health - residential with plant uptake (6%SOM)**
Data set: All
Client: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no.: C-19522
Lab. report no(s).: 21-21169-1 & 21-21073-2

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 2 - Groundwater Beneath Source Assessment - groundwater samples
Water body receptor(s): Groundwater and surface water
Secondary receptor(s): Human health (abstraction)
Data set: Groundwater
Client: Tilbury
Site: Rochdale
Job no: C-19522
Test Certificates(s): 20/6723
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
7440-38-2	Arsenic (As) (dissolved)	SP	**H**	1	1	0.9	3.6	3.6	3.6	3.6	10	50	0	0	0	0	
7440-42-8	Boron (B) (dissolved)		NP	1	1	12	69	69	69	69	1000	2000	0	0	0	0	
7440-39-3	Barium (Ba) (dissolved)			1	1	1.8	168.2	168.2	168.2	168.2	1300	n/a	0		0		
7440-43-9	Cadmium (Cd) (dissolved)	**PH**	NP	1	0	0.03	<0.03	<0.03	<0.03	<0.03	5	0.08	0	0	0	0	EQS (inland) dependent on hardness of receiving surface water environment
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	**H**	1	0	2	<2	<2	<2	<2	n/a	3.4		0		0	
16065-83-1	Chromium (III) (Cr) (dissolved)	SP		1	0	2	<2	<2	<2	<2	n/a	4.7		0		0	
7440-47-3	Chromium (Cr) (total) (dissolved)			1	0	0.2	<0.2	<0.2	<0.2	<0.2	50	n/a	0		0		
7440-50-8	Copper (Cu) (dissolved)	SP	NP	1	0	1	<1	<1	<1	<1	2000	1	0	0	0	0	Bioavailable EQS (inland)
7439-89-6	Iron (Fe) (dissolved)	SP		1	0	4.7	<4.7	<4.7	<4.7	<4.7	200	1000	0	0	0	0	
7439-97-6	Mercury (Hg) (dissolved)	**PH**	**H**	1	0	0.5	<0.5	<0.5	<0.5	<0.5	1	0.07	0	1	0	0	
P1286	Manganese (Mn) (dissolved)	SP		1	1	1.5	679.5	679.5	679.5	679.5	50	123	1	1	1	1	Bioavailable EQS (inland)
7440-02-0	Nickel (Ni) (dissolved)	***P***	NP	1	1	0.2	2.2	2.2	2.2	2.2	20	4	0	0	0	0	Bioavailable EQS (inland)
7439-92-1	Lead (Pb) (dissolved)	***P***	**H**	1	0	0.4	<0.4	<0.4	<0.4	<0.4	10	1.2	0	0	0	0	Bioavailable EQS (inland)
7440-36-0	Antimony (Sb) (dissolved)		NP	1	0	2	<2	<2	<2	<2	5	n/a	0		0		
7782-49-2	Selenium (Se) (dissolved)		NP	1	0	1.2	<1.2	<1.2	<1.2	<1.2	10	n/a	0		0		
7440-62-2	Vanadium (V) (dissolved)			1	0	0.6	<0.6	<0.6	<0.6	<0.6	n/a	20		0		0	EQS (inland) dependent on hardness of receiving surface water environment
7440-66-6	Zinc (Zn) (dissolved)	SP	NP	1	1	1.5	1.6	1.6	1.6	1.6	n/a	12.3		0		0	Bioavailable EQS (inland) + ambient background concentration (ABC)
57-12-5	Cyanide (total)			1	0	10	<10	<10	<10	<10	50	n/a	0		0		
P1238	Ammnoniacal Nitrogen (as N)		NP	1	1	10	970	970	970	970	n/a	300		1		1	
16887-00-6	Chloride (Cl^-)			1	1	300	44200	44200	44200	44200	250000	250000	0	0	0	0	
16984-48-8	Fluoride (F^-)			1	0	300	<300	<300	<300	<300	1500	1000	0	0	0	0	EQS (inland) dependent on hardness of receiving surface water environment
P1348	Nitrate (NO_3^-)			1	0	200	<200	<200	<200	<200	50000	n/a	0		0		
14808-79-8	Sulfate (SO_4^{2-})			1	1	500	55400	55400	55400	55400	250000	400000	0	0	0	0	
P1134	pH (min.) (su)			1	1	0	7.49	7.49	7.49	7.49	6.5	6	0	0	0	0	
P1134	pH (max.) (su)			1	1	0	7.49	7.49	7.49	7.49	9.5	9	0	0	0	0	
120-12-7	Anthracene	***PH***	**H**	1	0	0.013	<0.013	<0.013	<0.013	<0.013	n/a	0.1		0		0	
50-32-8	Benzo(a)pyrene	***PH***	H	1	0	0.016	<0.016	<0.016	<0.016	<0.016	0.01	0.00017	1	1	0	0	Benzo(a)pyrene EQS used as marker substance for the group of benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene & indeno (1,2,3-cd)pyrene
206-44-0	Fluoranthene	***P***	**H**	1	0	0.012	<0.012	<0.012	<0.012	<0.012	n/a	0.0063		1		0	
91-20-3	Naphthalene	P	NP	1	0	0.1	<0.1	<0.1	<0.1	<0.1	n/a	2		0		0	
P1877	Phenol	SP	**NP**	1	0	10	<10	<10	<10	<10	n/a	7.7		1		0	
P1407	Ali EC5-EC6			1	0	10	<10	<10	<10	<10	15000	10	0	0	0	0	n-hexane fall within this fraction
P1408	Ali >EC6-EC8			1	1	10	140	140	140	140	15000	10	0	1	0	1	n-heptane falls within this fraction
P1409	Ali >EC8-EC10			1	1	5	118498	118498	118498	118498	300	10	1	1	1	1	n-octane and n-nonane fall within this fraction
P1410	Ali >EC10-EC12			1	1	10	301370	301370	301370	301370	300	10	1	1	1	1	
P1411	Ali >EC12-EC16			1	1	10	376970	376970	376970	376970	300	10	1	1	1	1	
P1938	Ali >EC16-EC35			1	1	10	131670	131670	131670	131670	n/a	10		1		1	
P1441	Aro EC5-EC7			1	0	10	<10	<10	<10	<10	1	10	1	0	0	0	Benzene wholly representative of this fraction
P1355	Aro >EC7-EC8			1	0	10	<10	<10	<10	<10	700	10	0	0	0	0	Toluene wholly representative of this fraction
P1356	Aro >EC8-EC10			1	0	10	<10	<10	<10	<10	300	10	0	0	0	0	Ethylbenzene / xylene / trimethylbenzene representative of this range
P1357	Aro >EC10-EC12			1	1	5	58809	58809	58809	58809	90	10	1	1	1	1	Naphthalene often forms a reasonable percentage of this fraction
P1358	Aro > EC12-EC16			1	1	10	148780	148780	148780	148780	90	10	1	1	1	1	2-methylnaphthalene, acenpthylene, acenapthene falls within this fraction
P1359	Aro >EC16-EC21			1	1	10	178740	178740	178740	178740	90	10	1	1	1	1	fluorene, anthracene, phenanthrene, pyrene falls within this range
P1360	Aro >EC21-EC35			1	1	10	50900	50900	50900	50900	90	10	1	1	1	1	Benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(cd)pyrene fall within this fraction
71-43-2	Benzene	P	**H**	1	0	0.5	<0.5	<0.5	<0.5	<0.5	1	10	0	0	0	0	
108-88-3	Toluene	SP	**H**	1	0	5	<5	<5	<5	<5	700	74	0	0	0	0	
100-41-4	Ethylbenzene		**H**	1	0	1	<1	<1	<1	<1	300	20	0	0	0	0	Proposed EQS for Ethylbenzene in Water, R&D Technical Report P2-115/TR4. EA 2001
95-47-6	o-Xylene		**H**	1	0	1	<1	<1	<1	<1	500	30	0	0	0	0	DWS/EQS for total xylene
P1374	m,p-Xylene		**H**	1	0	2	<2	<2	<2	<2	500	30	0	0	0	0	DWS/EQS for total xylene
1634-04-04	Methyl tertiary butyl ether (MTBE)		**NP**	1	0	0.1	<0.1	<0.1	<0.1	<0.1	15	n/a	0		0		Non health based value - WHO odour threshold

Remedial Targets Methodology Data Table

Hydrock

Hydrock Scenario: Scenario D - DWS & EQS (inland)

RTM Level: RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples

Water body receptor(s): Groundwater and surface water
Secondary receptor(s): Human health (abstraction)
Data set: Groundwater
Client: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no: C-19522
Test Certificates(s): 20/6723
Dataset ALL ZONES

PNEC calculated (inland EQS)

123* Exceeds solubility value
<1 Grey text and "<" sign if value <= LoD
999 Red text if value > DWS
Red fill if value > Inland Waters EQS

Surface Water Representative Hardness as mg/l $CaCO_3$ 10

								Strata / Zone	Glacial							
								Date sampled:	15/06/2020							
CAS / AGS Number	**Chemical of Potential Concern (µg/l)**	**WFD Designation**	**Hazardous Substance Status**	**Solubility Limit (µg/l)**	**No. of samples**	**Limit of Detection**	**DWS**	**Inland Waters EQS**	**BH102**							
7440-38-2	Arsenic (As) (dissolved)	SP	H		1	0.9	10	50	3.6							
7440-42-8	Boron (B) (dissolved)		NP		1	12	1000	2000	69							
7440-39-3	Barium (Ba) (dissolved)				1	1.8	1300	n/a	168.2							
7440-43-9	Cadmium (Cd) (dissolved)	PH	NP		1	0.03	5	0.08	<0.03							
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	H		1	2	n/a	3.4	<2							
16065-83-1	Chromium (III) (Cr) (dissolved)	SP			1	2	n/a	4.7	<2							
7440-47-3	Chromium (Cr) (total) (dissolved)				1	0.2	50	n/a	<0.2							
7440-50-8	Copper (Cu) (dissolved)	SP	NP		1	1	2000	1	<1							
7439-89-6	Iron (Fe) (dissolved)	SP			1	4.7	200	1000	<4.7							
7439-97-6	Mercury (Hg) (dissolved)	PH	H		1	0.5	1	0.07	<0.5							
P1286	Manganese (Mn) (dissolved)	SP			1	1.5	50	123	679.5							
7440-02-0	Nickel (Ni) (dissolved)	P	NP		1	0.2	20	4	2.2							
7439-92-1	Lead (Pb) (dissolved)	P	H		1	0.4	10	1.2	<0.4							
7440-36-0	Antimony (Sb) (dissolved)		NP		1	2	5	n/a	<2							
7782-49-2	Selenium (Se) (dissolved)		NP		1	1.2	10	n/a	<1.2							
7440-62-2	Vanadium (V) (dissolved)				1	0.6	n/a	20	<0.6							
7440-66-6	Zinc (Zn) (dissolved)	SP	NP		1	1.5	n/a	12.3	1.6							
57-12-5	Cyanide (total)				1	10	50	n/a	<10							
P1238	Ammnoniacal Nitrogen (as N)		NP		1	10	n/a	300	970							
16887-00-6	Chloride (Cl^-)				1	300	250000	250000	44200							
16984-48-8	Fluoride (F^-)				1	300	1500	1000	<300							
P1348	Nitrate (NO_3^-)				1	200	50000	n/a	<200							
14808-79-8	Sulfate (SO_4^{2-})				1	500	250000	400000	55400							
P1134	pH (min.) (su)				1	0	6.5	6	7.49							
P1134	pH (max.) (su)				1	0	9.5	9	7.49							
120-12-7	Anthracene	PH	H	56	1	0.013	n/a	0.1	<0.013							
50-32-8	Benzo(a)pyrene	PH	H	3.8	1	0.016	0.01	0.00017	<0.016							
206-44-0	Fluoranthene	P	H	230	1	0.012	n/a	0.0063	<0.012							
91-20-3	Naphthalene	P	NP	19000	1	0.1	n/a	2	<0.1							
P1877	Phenol	SP	NP	84100000	1	10	n/a	7.7	<10							
P1407	Ali EC5-EC6			35900	1	10	15000	10	<10							
P1408	Ali >EC6-EC8			5370	1	10	15000	10	140							
P1409	Ali >EC8-EC10			427	1	5	300	10	**118498 ***							
P1410	Ali >EC10-EC12			33.9	1	10	300	10	**301370 ***							
P1411	Ali >EC12-EC16			0.759	1	10	300	10	**376970 ***							
P1938	Ali >EC16-EC35			0.00254	1	10	n/a	10	**131670 ***							
P1441	Aro EC5-EC7			1780000	1	10	1	10	<10							
P1355	Aro >EC7-EC8			590000	1	10	700	10	<10							
P1356	Aro >EC8-EC10			64600	1	10	300	10	<10							
P1357	Aro >EC10-EC12			24500	1	5	90	10	**58809 ***							
P1358	Aro > EC12-EC16			5750	1	10	90	10	**148780 ***							
P1359	Aro >EC16-EC21			653	1	10	90	10	**178740 ***							
P1360	Aro >EC21-EC35			6.61	1	10	90	10	**50900 ***							
71-43-2	Benzene	P	H	1780000	1	0.5	1	10	<0.5							
108-88-3	Toluene	SP	H	590000	1	5	700	74	<5							
100-41-4	Ethylbenzene		H	180000	1	1	300	20	<1							
95-47-6	o-Xylene		H	173000	1	1	500	30	<1							
P1374	m,p-Xylene		H	200000	1	2	500	30	<2							
1634-04-04	Methyl tertiary butyl ether (MTBE)		NP	48000000	1	0.1	15	n/a	<0.1							

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: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no: C-19522
Test Certificates(s): 20/6723
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
7440-38-2	Arsenic (As) (dissolved)	SP	**H**	2	1	0.9	<0.9	2.5	2.42	2.5	10	50	0	0	0	0	
7440-42-8	Boron (B) (dissolved)		NP	2	0	12	<12	<12	<12	<12	1000	2000	0	0	0	0	
7440-39-3	Barium (Ba) (dissolved)			2	2	1.8	4.9	143.6	136.665	143.6	1300	n/a	0		0		
7440-43-9	Cadmium (Cd) (dissolved)	**PH**	NP	2	0	0.03	<0.03	<0.03	<0.03	<0.03	5	0.08	0	0	0	0	EQS (inland) dependent on hardness of receiving surface water environment
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	**H**	2	0	6	<6	<6	<6	<6	n/a	3.4		2		0	
16065-83-1	Chromium (III) (Cr) (dissolved)	SP		2	0	6	<6	<6	<6	<6	n/a	4.7		2		0	
7440-47-3	Chromium (Cr) (total) (dissolved)			2	1	0.2	<0.2	0.6	0.58	0.6	50	n/a	0		0		
7440-50-8	Copper (Cu) (dissolved)	SP	NP	2	1	3	<3	4	3.95	4	2000	1	0	2	0	1	Bioavailable EQS (inland)
7439-89-6	Iron (Fe) (dissolved)	SP		2	2	4.7	169.2	336	327.66	336	200	1000	1	0	1	0	
7439-97-6	Mercury (Hg) (dissolved)	**PH**	**H**	2	0	0.01	<0.01	<0.01	<0.01	<0.01	1	0.07	0	0	0	0	
P1286	Manganese (Mn) (dissolved)	SP		2	1	1.5	<1.5	6.5	6.25	6.5	50	123	0	0	0	0	Bioavailable EQS (inland)
7440-02-0	Nickel (Ni) (dissolved)	***P***	NP	2	0	0.2	<0.2	<0.2	<0.2	<0.2	20	4	0	0	0	0	Bioavailable EQS (inland)
7439-92-1	Lead (Pb) (dissolved)	***P***	**H**	2	0	0.4	<0.4	<0.4	<0.4	<0.4	10	1.2	0	0	0	0	Bioavailable EQS (inland)
7440-36-0	Antimony (Sb) (dissolved)		NP	2	0	2	<2	<2	<2	<2	5	n/a	0		0		
7782-49-2	Selenium (Se) (dissolved)		NP	2	0	1.2	<1.2	<1.2	<1.2	<1.2	10	n/a	0		0		
7440-62-2	Vanadium (V) (dissolved)			2	2	0.6	0.8	2.2	2.13	2.2	n/a	20		0		0	EQS (inland) dependent on hardness of receiving surface water environment
7440-66-6	Zinc (Zn) (dissolved)	SP	NP	2	2	1.5	5.2	11.7	11.375	11.7	n/a	12.3		0		0	Bioavailable EQS (inland) + ambient background concentration (ABC)
57-12-5	Cyanide (total)			2	0	10	<10	<10	<10	<10	50	n/a	0		0		
P1238	Ammnoniacal Nitrogen (as N)		NP	2	2	10	20	1390	1321.5	1390	n/a	300		1		1	
16887-00-6	Chloride (Cl^-)			2	2	300	600	1700	1645	1700	250000	250000	0	0	0	0	
16984-48-8	Fluoride (F^-)			2	0	300	<300	<300	<300	<300	1500	1000	0	0	0	0	EQS (inland) dependent on hardness of receiving surface water environment
14808-79-8	Sulfate (SO_4^{2-})			2	1	500	<500	3100	2970	3100	250000	400000	0	0	0	0	
P1134	pH (min.) (su)			2	2	0	5.43	8.3	8.1565	8.3	6.5	6	1	1	1	1	
P1134	pH (max.) (su)			2	2	0	5.43	8.3	8.1565	8.3	9.5	9	0	0	0	0	

Remedial Targets Methodology Data Table

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: Tilbury Douglas
Site: Rochdale SEND - Passivhaus
Job no: C-19522
Test Certificates(s): 20/6723
Dataset ALL ZONES

	PNEC calculated (inland EQS)

123*	Exceeds solubility value
<1	Grey text and "<" sign if value <= LoD
999	Red text if value > DWS
	Red fill if value > Inland Waters EQS

Surface Water Representative Hardness as mg/l $CaCO_3$ 10

CAS / AGS Number	Chemical of Potential Concern (µg/l)	WFD Designation	Hazardous Substance Status	Solubility Limit (µg/l)	No. of samples	Limit of Detection	DWS	Inland Waters EQS	TP102	TP103
								Strata / Zone	Made Ground	Peat
								Date sampled:	27/05/2020	27/05/2020
7440-38-2	Arsenic (As) (dissolved)	SP	H		2	0.9	10	50	2.5	<0.9
7440-42-8	Boron (B) (dissolved)		NP		2	12	1000	2000	<12	<12
7440-39-3	Barium (Ba) (dissolved)				2	1.8	1300	n/a	4.9	143.6
7440-43-9	Cadmium (Cd) (dissolved)	PH	NP		2	0.03	5	0.08	<0.03	<0.03
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	H		2	6	n/a	3.4	<6	<6
16065-83-1	Chromium (III) (Cr) (dissolved)	SP			2	6	n/a	4.7	<6	<6
7440-47-3	Chromium (Cr) (total) (dissolved)				2	0.2	50	n/a	<0.2	0.6
7440-50-8	Copper (Cu) (dissolved)	SP	NP		2	3	2000	1	<3	4
7439-89-6	Iron (Fe) (dissolved)	SP			2	4.7	200	1000	336	169.2
7439-97-6	Mercury (Hg) (dissolved)	PH	H		2	0.01	1	0.07	<0.01	<0.01
P1286	Manganese (Mn) (dissolved)	SP			2	1.5	50	123	6.5	<1.5
7440-02-0	Nickel (Ni) (dissolved)	P	NP		2	0.2	20	4	<0.2	<0.2
7439-92-1	Lead (Pb) (dissolved)	P	H		2	0.4	10	1.2	<0.4	<0.4
7440-36-0	Antimony (Sb) (dissolved)		NP		2	2	5	n/a	<2	<2
7782-49-2	Selenium (Se) (dissolved)		NP		2	1.2	10	n/a	<1.2	<1.2
7440-62-2	Vanadium (V) (dissolved)				2	0.6	n/a	20	2.2	0.8
7440-66-6	Zinc (Zn) (dissolved)	SP	NP		2	1.5	n/a	12.3	5.2	11.7
57-12-5	Cyanide (total)				2	10	50	n/a	<10	<10
P1238	Ammnoniacal Nitrogen (as N)		NP		2	10	n/a	300	1390	20
16887-00-6	Chloride (Cl^-)				2	300	250000	250000	1700	600
16984-48-8	Fluoride (F^-)				2	300	1500	1000	<300	<300
14808-79-8	Sulfate (SO_4^{2-})				2	500	250000	400000	<500	3100
P1134	pH (min.) (su)				2	0	6.5	6	5.43	8.3
P1134	pH (max.) (su)				2	0	9.5	9	5.43	8.3

Appendix E 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.

9N0OU-WAJTQ-FDBZJ

Job name

Rochdale SEND - Passivhaus

Description/Comments

i2 Lab reports: 21-21169-1 & 21-21073-2

Project

C-19522

Site

Rochdale SEND - Passivhaus

Classified by

Name:
Will Swinnerton
Date:
15 Dec 2021 11:03 GMT
Telephone:
(01782) 261919

Company:
Hydrock Consultants Ltd
4 Lakeside, Festival Park, Stoke-on-Trent.
ST1 5RY

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	Date
Hazardous Waste Classification	08 Sep 2020

Next 3 year Refresher due by Sep 2023

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP10-1-03112021-0.10		Non Hazardous		2
2	TP11-1-03112021-0.50		Non Hazardous		4
3	TP12-1-03112021-0.30		Non Hazardous		6
4	TP13-1-03112021-0.30		Non Hazardous		12
5	TP14-1-03112021-0.40		Non Hazardous		14
6	WS01-1-02112021-0.60		Non Hazardous		16
7	WS03-1-02112021-0.20		Non Hazardous		18
8	WS05-1-01112021-0.40		Non Hazardous		20
9	WS08-1-01112021-0.60		Non Hazardous		22
10	TP01-1-03112021-0.15		Non Hazardous		24
11	TP03-1-03112021-0.30		Non Hazardous		26
12	TP05-1-03112021-0.15		Non Hazardous		32

Related documents

#	Name	Description
1	21-21073_HWOL_Results.hwol	.hwol file used to create the Job
2	21-21169_HWOL_Results.hwol	.hwol file used to create the Job
3	Hydrock Standard plus Cresol (ammended Lead)	waste stream template used to create this Job

Report

Created by: Will Swinnerton

Created date: 15 Dec 2021 11:03 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	34
Appendix B: Rationale for selection of metal species	38
Appendix C: Version	39

Classification of sample: TP10-1-03112021-0.10

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

Sample details

Sample name:
TP10-1-03112021-0.10
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	EU 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		0.19	mg/kg		0.133	mg/kg	0.0000133 %	✓	
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15	mg/kg	1.32	13.863	mg/kg	0.00139 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.92	mg/kg		0.644	mg/kg	0.0000644 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.61	mg/kg		0.427	mg/kg	0.0000427 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.77	mg/kg		0.539	mg/kg	0.0000539 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		0.46	mg/kg		0.322	mg/kg	0.0000322 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.48	mg/kg		0.336	mg/kg	0.0000336 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.74	mg/kg	2.775	1.438	mg/kg	0.000144 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8	mg/kg	13.43	7.521	mg/kg	0.000752 %	✓	
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		16	mg/kg	1.462	16.369	mg/kg	0.00164 %	✓	
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		0.77	mg/kg		0.539	mg/kg	0.0000539 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		52	mg/kg	1.126	40.982	mg/kg	0.0041 %	✓	

#		Determinand	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index 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				1.8	mg/kg		1.26	mg/kg	0.000126 %	✓	
			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				0.44	mg/kg		0.308	mg/kg	0.0000308 %	✓	
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	110	mg/kg		77	mg/kg	0.0077 %	✓	
		082-001-00-6											
23		mercury { mercury dichloride }				0.5	mg/kg	1.353	0.474	mg/kg	0.0000474 %	✓	
		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 }				17	mg/kg	1.579	18.796	mg/kg	0.00188 %	✓	
		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				0.79	mg/kg		0.553	mg/kg	0.0000553 %	✓	
			201-581-5	85-01-8									
28		pyrene				1.5	mg/kg		1.05	mg/kg	0.000105 %	✓	
			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	79.288	mg/kg	0.00793 %	✓	
		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	28.741	mg/kg	0.00287 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0298 %		

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: TP11-1-03112021-0.50

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

Sample details

Sample name:
TP11-1-03112021-0.50
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	EU 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		0.23	mg/kg		0.189	mg/kg	0.0000189 %	✓	
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14	mg/kg	1.32	15.157	mg/kg	0.00152 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.3	mg/kg		1.066	mg/kg	0.000107 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.2	mg/kg		0.984	mg/kg	0.0000984 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.3	mg/kg		1.066	mg/kg	0.000107 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		0.7	mg/kg		0.574	mg/kg	0.0000574 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.61	mg/kg		0.5	mg/kg	0.00005 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.77	mg/kg	2.775	1.752	mg/kg	0.000175 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.5	mg/kg	13.43	5.506	mg/kg	0.000551 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.6	mg/kg	1.285	0.632	mg/kg	0.0000492 %	✓	
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20	mg/kg	1.462	23.97	mg/kg	0.0024 %	✓	
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		1.1	mg/kg		0.902	mg/kg	0.0000902 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		51	mg/kg	1.126	47.085	mg/kg	0.00471 %	✓	

#		Determinand	EU 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		2.1	mg/kg		1.722	mg/kg	0.000172 %	✓	
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		0.65	mg/kg		0.533	mg/kg	0.0000533 %	✓	
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	150	mg/kg		123	mg/kg	0.0123 %	✓	
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]		23	mg/kg	1.579	29.789	mg/kg	0.00298 %	✓	
26		pH			PH		6.5	pH		6.5	pH	6.5 pH		
27		phenanthrene		201-581-5	85-01-8		0.9	mg/kg		0.738	mg/kg	0.0000738 %	✓	
28		pyrene		204-927-3	129-00-0		1.8	mg/kg		1.476	mg/kg	0.000148 %	✓	
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		200	mg/kg	1.245	204.133	mg/kg	0.0204 %	✓	
31		monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		29	mg/kg	1.785	42.452	mg/kg	0.00425 %	✓	
											Total:	0.051 %		

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: TP12-1-03112021-0.30

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

Sample details

Sample name:
TP12-1-03112021-0.30
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	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		1,1-dichloroethane and 1,2-dichloroethane (combined)		203-458-1, 200-863-5	107-06-2, 75-34-3		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
2		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		anthracene		204-371-1	120-12-7		0.34	mg/kg		0.292	mg/kg	0.0000292 %	✓	
5		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19	mg/kg	1.32	21.574	mg/kg	0.00216 %	✓	
6		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.1	mg/kg		0.946	mg/kg	0.0000946 %	✓	
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1	mg/kg		0.86	mg/kg	0.000086 %	✓	
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.4	mg/kg		1.204	mg/kg	0.00012 %	✓	
10		benzo[ghi]perylene		205-883-8	191-24-2		0.62	mg/kg		0.533	mg/kg	0.0000533 %	✓	
11		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.36	mg/kg		0.31	mg/kg	0.000031 %	✓	
12		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.85	mg/kg	2.775	2.029	mg/kg	0.000203 %	✓	
13		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.5	mg/kg	13.43	5.775	mg/kg	0.000577 %	✓	
14		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.6	mg/kg	1.285	0.663	mg/kg	0.0000516 %	✓	
15		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18	mg/kg	1.462	22.625	mg/kg	0.00226 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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**
17		chrysene	601-048-00-0	205-923-4	218-01-9		1	mg/kg		0.86	mg/kg	0.000086 %	✓	
18		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		54	mg/kg	1.126	52.286	mg/kg	0.00523 %	✓	
19		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**
20		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**
21		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
22		fluoranthene		205-912-4	206-44-0		2	mg/kg		1.72	mg/kg	0.000172 %	✓	
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
24		indeno[123-cd]pyrene		205-893-2	193-39-5		0.5	mg/kg		0.43	mg/kg	0.000043 %	✓	
25		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	120	mg/kg		103.2	mg/kg	0.0103 %	✓	
26		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**
27		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.0001	mg/kg		<0.0001	mg/kg	<0.00000001 %		**<LOD**
28		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		22	mg/kg	1.579	29.884	mg/kg	0.00299 %	✓	
29		pH			PH		6.7	pH		6.7	pH	6.7 pH		
30		phenanthrene		201-581-5	85-01-8		1.3	mg/kg		1.118	mg/kg	0.000112 %	✓	
31		phenol	604-001-00-2	203-632-7	108-95-2		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		**<LOD**
32		pyrene		204-927-3	129-00-0		1.7	mg/kg		1.462	mg/kg	0.000146 %	✓	
33		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**
34		tetrachloroethylene	602-028-00-4	204-825-9	127-18-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
36		TPH (C6 to C40) petroleum group			TPH		44	mg/kg		37.84	mg/kg	0.00378 %	✓	
37		trichloroethylene; trichloroethene	602-027-00-9	201-167-4	79-01-6		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
38		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		**<LOD**
39		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		140	mg/kg	1.245	149.864	mg/kg	0.015 %	✓	
40		hexachlorobenzene	602-065-00-6	204-273-9	118-74-1		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
41		m-cresol; [1] o-cresol; [2] p-cresol; [3] mix-cresol [4]				<0.5 mg/kg		<0.5 mg/kg	<0.00005 %		<LOD
		604-004-00-9	203-577-9 [1] 202-423-8 [2] 203-398-6 [3] 215-293-2 [4]	108-39-4 [1] 95-48-7 [2] 106-44-5 [3] 1319-77-3 [4]							
42		monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
				P1186							
43		vanadium { divanadium pentaoxide; vanadium pentoxide }				28 mg/kg	1.785	42.987 mg/kg	0.0043 %	✓	
		023-001-00-8	215-239-8	1314-62-1							
44		aniline				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		612-008-00-7	200-539-3	62-53-3							
45		2-chlorophenol; [1] 4-chlorophenol; [2] 3-chlorophenol; [3] chlorophenol [4]				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		604-008-00-0	202-433-2 [1] 203-402-6 [2] 203-582-6 [3] 246-691-4 [4]	95-57-8 [1] 106-48-9 [2] 108-43-0 [3] 25167-80-0 [4]							
46		bis(2-chloroethyl) ether				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		603-029-00-2	203-870-1	111-44-4							
47		hexachloroethane				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			200-666-4	67-72-1							
48		nitrobenzene				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
		609-003-00-7	202-716-0	98-95-3							
49		3,5,5-trimethylcyclohex-2-enone; isophorone				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		606-012-00-8	201-126-0	78-59-1							
50		2-nitrophenol				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
			201-857-5	88-75-5							
51		3,4-xylenol; [1] 2,5-xylenol; [2] 2,4-xylenol; [3] 2,3-xylenol; [4] 2,6-xylenol; [5] xylenol; [6] 2,4(or 2,5)-xylenol [7]				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
		604-006-00-X	202-439-5 [1] 202-461-5 [2] 203-321-6 [3] 208-395-3 [4] 209-400-1 [5] 215-089-3 [6] 276-245-4 [7]	95-65-8 [1] 95-87-4 [2] 105-67-9 [3] 526-75-0 [4] 576-26-1 [5] 1300-71-6 [6] 71975-58-1 [7]							
52		bis(2-chloroethoxy)methane				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
			203-920-2	111-91-1							
53		2,4-dichlorophenol				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
		604-011-00-7	204-429-6	120-83-2							
54		4-chloroaniline				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		612-137-00-9	203-401-0	106-47-8							
55		chlorocresol; 4-chloro-m-cresol; 4-chloro-3-methylphenol				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		604-014-00-3	200-431-6	59-50-7							
56		2,4,6-trichlorophenol				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		604-018-00-5	201-795-9	88-06-2							
57		2,4,5-trichlorophenol				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		604-017-00-X	202-467-8	95-95-4							
58		2-methyl naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			202-078-3	91-57-6							
59		2-chloronaphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			202-079-9	91-58-7							
60		dimethyl phthalate				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			205-011-6	131-11-3							
61		2,6-dinitrotoluene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		609-049-00-8	210-106-0	606-20-2							
62		2,4-dinitrotoluene; [1] dinitrotoluene [2]				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		609-007-00-9	204-450-0 [1] 246-836-1 [2]	121-14-2 [1] 25321-14-6 [2]							
63		dibenzofuran				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
			205-071-3	132-64-9							
64		4-chlorophenylphenylether				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
			230-281-7	7005-72-3							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
65		diethyl phthalate				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		**<LOD**
			201-550-6	84-66-2									
66		o-nitroaniline; [1] m-nitroaniline; [2] p-nitroaniline [3]				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		**<LOD**
		612-012-00-9	201-855-4 [1] 202-729-1 [2] 202-810-1 [3]	88-74-4 [1] 99-09-2 [2] 100-01-6 [3]									
67		azobenzene				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**
		611-001-00-6	203-102-5	103-33-3									
68		4-bromophenylphenylether				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		**<LOD**
			202-952-4	101-55-3									
69		carbazole				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**
			201-696-0	86-74-8									
70		dibutyl phthalate; DBP				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		**<LOD**
		607-318-00-4	201-557-4	84-74-2									
71		anthraquinone				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**
		606-151-00-4	201-549-0	84-65-1									
72		BBP; benzyl butyl phthalate				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**
		607-430-00-3	201-622-7	85-68-7									
73		1,1,1-trichloroethane; methyl chloroform				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-013-00-2	200-756-3	71-55-6									
74		1,1,2,2-tetrachloroethane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-015-00-3	201-197-8	79-34-5									
75		1,1,2-trichloroethane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-014-00-8	201-166-9	79-00-5									
76		1,1-dichloroethylene; vinylidene chloride				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-025-00-8	200-864-0	75-35-4									
77		1,1-dichloropropene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-031-00-0	209-253-3	563-58-6									
78		1,2,3-trichlorobenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
			201-757-1	87-61-6									
79		1,2,4-trimethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		601-043-00-3	202-436-9	95-63-6									
80		1,2-dibromoethane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-010-00-6	203-444-5	106-93-4									
81		1,2-dichlorobenzene; o-dichlorobenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-034-00-7	202-425-9	95-50-1									
82		1,2-dichloropropane; propylene dichloride				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-020-00-0	201-152-2	78-87-5									
83		1,3-dichlorbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-067-00-7	208-792-1	541-73-1									
84		1,3-dichloropropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
			205-531-3	142-28-9									
85		1,4-dichlorobenzene; p-dichlorobenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-035-00-2	203-400-5	106-46-7									
86		2,2-dichloropropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
			209-832-0	594-20-7									
87		bromodichloromethane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
			200-856-7	75-27-4									
88		bromomethane; methylbromide				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-002-00-2	200-813-2	74-83-9									
89		bromobenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-060-00-9	203-623-8	108-86-1									
90		n-butylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
			203-209-7	104-51-8									
91		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]									
92		chlorobenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-033-00-1	203-628-5	108-90-7									

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
93		carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8	56-23-5		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
94		chloroethane	602-009-00-0	200-830-5	75-00-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
95		chloroform; trichloromethane	602-006-00-4	200-663-8	67-66-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
96		chloromethane; methyl chloride	602-001-00-7	200-817-4	74-87-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
97	•	dibromochloromethane		204-704-0	124-48-1		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
98		1,2-dibromo-3-chloropropane	602-021-00-6	202-479-3	96-12-8		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
99		dibromomethane	602-003-00-8	200-824-2	74-95-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
100	•	hexachlorobutadiene		201-765-5	87-68-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
101		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
102	•	4-isopropyltoluene		202-796-7	99-87-6		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
103	•	sec-butylbenzene		205-227-0	135-98-8		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
104		styrene	601-026-00-0	202-851-5	100-42-5		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
105	•	trans-1,3-dichloropropene		431-460-4	10061-02-6		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
106	•	tert-butylbenzene		202-632-4	98-06-6		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
107		bromoform; tribromomethane	602-007-00-X	200-854-6	75-25-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
108		1,2,4-trichlorobenzene	602-087-00-6	204-428-0	120-82-1		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
109	•	1,1,1,2-tetrachloroethane		211-135-1	630-20-6		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
110	•	trichlorofluoromethane		200-892-3	75-69-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
111		mesitylene; 1,3,5-trimethylbenzene	601-025-00-5	203-604-4	108-67-8		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
112		vinyl chloride; chloroethylene	602-023-00-7	200-831-0	75-01-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
113		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]	602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
114		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]	602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
115		cumene; [1] propylbenzene [2]	601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
											Total:	0.0492 %		

Key

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

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because The sample is not wet and unlikely to be flammable.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00378%)

Classification of sample: TP13-1-03112021-0.30

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

Sample details

Sample name:
TP13-1-03112021-0.30
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	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		26	mg/kg	1.32	29.522	mg/kg	0.00295 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.2	mg/kg		1.032	mg/kg	0.000103 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.2	mg/kg		1.032	mg/kg	0.000103 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.3	mg/kg		1.118	mg/kg	0.000112 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		0.74	mg/kg		0.636	mg/kg	0.0000636 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.61	mg/kg		0.525	mg/kg	0.0000525 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2	mg/kg	2.775	2.864	mg/kg	0.000286 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8	mg/kg	13.43	9.24	mg/kg	0.000924 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23	mg/kg	1.462	28.91	mg/kg	0.00289 %	✓	
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	mg/kg		0.86	mg/kg	0.000086 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		79	mg/kg	1.126	76.493	mg/kg	0.00765 %	✓	

#		Determinand	EU 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		0.21	mg/kg		0.181	mg/kg	0.0000181 %	✓	
19		fluoranthene		205-912-4	206-44-0		1.8	mg/kg		1.548	mg/kg	0.000155 %	✓	
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		0.63	mg/kg		0.542	mg/kg	0.0000542 %	✓	
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	210	mg/kg		180.6	mg/kg	0.0181 %	✓	
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]		32	mg/kg	1.579	43.468	mg/kg	0.00435 %	✓	
26		pH			PH		7.6	pH		7.6	pH	7.6 pH		
27		phenanthrene		201-581-5	85-01-8		0.7	mg/kg		0.602	mg/kg	0.0000602 %	✓	
28		pyrene		204-927-3	129-00-0		1.6	mg/kg		1.376	mg/kg	0.000138 %	✓	
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		230	mg/kg	1.245	246.204	mg/kg	0.0246 %	✓	
31		monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		39	mg/kg	1.785	59.875	mg/kg	0.00599 %	✓	
											Total:	0.0694 %		

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: TP14-1-03112021-0.40

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

Sample details

Sample name:
TP14-1-03112021-0.40
Moisture content:
35%
(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: 35% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU 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		0.47	mg/kg		0.306	mg/kg	0.0000305 %	✓	
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		35	mg/kg	1.32	30.037	mg/kg	0.003 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.3	mg/kg		1.495	mg/kg	0.00015 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.3	mg/kg		0.845	mg/kg	0.0000845 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.6	mg/kg		1.04	mg/kg	0.000104 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		0.74	mg/kg		0.481	mg/kg	0.0000481 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.93	mg/kg		0.605	mg/kg	0.0000605 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.6	mg/kg	2.775	2.886	mg/kg	0.000289 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8	mg/kg	13.43	6.984	mg/kg	0.000698 %	✓	
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		21	mg/kg	1.462	19.95	mg/kg	0.002 %	✓	
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		1.4	mg/kg		0.91	mg/kg	0.000091 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		92	mg/kg	1.126	67.328	mg/kg	0.00673 %	✓	

#		Determinand	EU 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		0.25	mg/kg		0.163	mg/kg	0.0000163 %	✓	
19		fluoranthene		205-912-4	206-44-0		3.5	mg/kg		2.275	mg/kg	0.000228 %	✓	
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		0.7	mg/kg		0.455	mg/kg	0.0000455 %	✓	
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	190	mg/kg		123.5	mg/kg	0.0124 %	✓	
23		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.6	mg/kg	1.353	0.528	mg/kg	0.0000528 %	✓	
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]		36	mg/kg	1.579	36.96	mg/kg	0.0037 %	✓	
26		pH			PH		7.5	pH		7.5	pH	7.5 pH		
27		phenanthrene		201-581-5	85-01-8		1.2	mg/kg		0.78	mg/kg	0.000078 %	✓	
28		pyrene		204-927-3	129-00-0		2.9	mg/kg		1.885	mg/kg	0.000189 %	✓	
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		160	mg/kg	1.245	129.45	mg/kg	0.0129 %	✓	
31		monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		52	mg/kg	1.785	60.339	mg/kg	0.00603 %	✓	
											Total:	0.0496 %		

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: WS01-1-02112021-0.60

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

Sample details

Sample name:
WS01-1-02112021-0.60
Moisture content:
68%
(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: 68% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU 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		3.1	mg/kg	1.32	1.31	mg/kg	0.000131 %	✓	
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		0.17	mg/kg	2.775	0.151	mg/kg	0.0000151 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8	mg/kg	13.43	3.438	mg/kg	0.000344 %	✓	
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		2.8	mg/kg	1.462	1.31	mg/kg	0.000131 %	✓	
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		8.7	mg/kg	1.126	3.134	mg/kg	0.000313 %	✓	

#		Determinand	EU 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	16	mg/kg		5.12	mg/kg	0.000512 %	✓	
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]		4.7	mg/kg	1.579	2.376	mg/kg	0.000238 %	✓	
26		pH			PH		6.2	pH		6.2	pH	6.2 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		40	mg/kg	1.245	15.932	mg/kg	0.00159 %	✓	
31		monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		4.3	mg/kg	1.785	2.456	mg/kg	0.000246 %	✓	
											Total:	0.00432 %		

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: WS03-1-02112021-0.20

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

Sample details

Sample name:
WS03-1-02112021-0.20
Moisture content:
33%
(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: 33% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU 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		24	mg/kg	1.32	21.231	mg/kg	0.00212 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.59	mg/kg		0.395	mg/kg	0.0000395 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.62	mg/kg		0.415	mg/kg	0.0000415 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.76	mg/kg		0.509	mg/kg	0.0000509 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		0.4	mg/kg		0.268	mg/kg	0.0000268 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.26	mg/kg		0.174	mg/kg	0.0000174 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	2.045	mg/kg	0.000205 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8	mg/kg	13.43	7.198	mg/kg	0.00072 %	✓	
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		21	mg/kg	1.462	20.564	mg/kg	0.00206 %	✓	
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		0.57	mg/kg		0.382	mg/kg	0.0000382 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		52	mg/kg	1.126	39.226	mg/kg	0.00392 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19		fluoranthene		205-912-4	206-44-0		1.1	mg/kg		0.737	mg/kg	0.0000737 %	✓	
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		0.31	mg/kg		0.208	mg/kg	0.0000208 %	✓	
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	120	mg/kg		80.4	mg/kg	0.00804 %	✓	
23		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.5	mg/kg	1.353	0.453	mg/kg	0.0000453 %	✓	
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]		22	mg/kg	1.579	23.282	mg/kg	0.00233 %	✓	
26		pH			PH		7.5	pH		7.5	pH	7.5 pH		
27		phenanthrene		201-581-5	85-01-8		0.62	mg/kg		0.415	mg/kg	0.0000415 %	✓	
28		pyrene		204-927-3	129-00-0		0.87	mg/kg		0.583	mg/kg	0.0000583 %	✓	
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		99	mg/kg	1.245	82.562	mg/kg	0.00826 %	✓	
31		monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		34	mg/kg	1.785	40.667	mg/kg	0.00407 %	✓	
											Total:	0.0329 %		

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: WS05-1-01112021-0.40

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

Sample details

Sample name:
WS05-1-01112021-0.40
Moisture content:
23%
(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: 23% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU 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		0.26	mg/kg		0.2	mg/kg	0.00002 %	✓	
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19	mg/kg	1.32	19.316	mg/kg	0.00193 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.2	mg/kg		0.924	mg/kg	0.0000924 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.1	mg/kg		0.847	mg/kg	0.0000847 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.5	mg/kg		1.155	mg/kg	0.000116 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		0.8	mg/kg		0.616	mg/kg	0.0000616 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.41	mg/kg		0.316	mg/kg	0.0000316 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.98	mg/kg	2.775	2.094	mg/kg	0.000209 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.5	mg/kg	13.43	5.171	mg/kg	0.000517 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24	mg/kg	1.462	27.01	mg/kg	0.0027 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		1.5	mg/kg	1.923	2.221	mg/kg	0.000222 %	✓	
15		chrysene	601-048-00-0	205-923-4	218-01-9		1	mg/kg		0.77	mg/kg	0.000077 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		54	mg/kg	1.126	46.814	mg/kg	0.00468 %	✓	

#		Determinand	EU 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		0.21	mg/kg		0.162	mg/kg	0.0000162 %	✓	
19		fluoranthene		205-912-4	206-44-0		1.9	mg/kg		1.463	mg/kg	0.000146 %	✓	
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		0.59	mg/kg		0.454	mg/kg	0.0000454 %	✓	
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	160	mg/kg		123.2	mg/kg	0.0123 %	✓	
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]		24	mg/kg	1.579	29.189	mg/kg	0.00292 %	✓	
26		pH			PH		7	pH		7	pH	7pH		
27		phenanthrene		201-581-5	85-01-8		0.94	mg/kg		0.724	mg/kg	0.0000724 %	✓	
28		pyrene		204-927-3	129-00-0		1.7	mg/kg		1.309	mg/kg	0.000131 %	✓	
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		170	mg/kg	1.245	162.933	mg/kg	0.0163 %	✓	
31		monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		29	mg/kg	1.785	39.863	mg/kg	0.00399 %	✓	
											Total:	0.0472 %		

Key

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

Supplementary Hazardous Property Information

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"
Force this Hazardous property to non hazardous because To low to be oxidising

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00022%)

Classification of sample: WS08-1-01112021-0.60

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

Sample details

Sample name:
WS08-1-01112021-0.60
Moisture content:
80%
(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: 80% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU 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		4.8	mg/kg	1.32	1.268	mg/kg	0.000127 %	✓	
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		0.23	mg/kg	2.775	0.128	mg/kg	0.0000128 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.4	mg/kg	13.43	3.76	mg/kg	0.000376 %	✓	
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		8.3	mg/kg	1.462	2.426	mg/kg	0.000243 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		2.2	mg/kg	1.923	0.846	mg/kg	0.0000846 %	✓	
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		17	mg/kg	1.126	3.828	mg/kg	0.000383 %	✓	

#		Determinand	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index 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	25 mg/kg		5 mg/kg	0.0005 %	✓	
		082-001-00-6									
23		mercury { mercury dichloride }				0.4 mg/kg	1.353	0.108 mg/kg	0.0000108 %	✓	
		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 }				11 mg/kg	1.579	3.475 mg/kg	0.000347 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
26		pH				<		<	<		**ND**
				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 }				32 mg/kg	1.245	7.966 mg/kg	0.000797 %	✓	
		030-013-00-7	215-222-5	1314-13-2							
31		monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %		**<LOD**
				P1186							
32		vanadium { divanadium pentaoxide; vanadium pentoxide }				8.3 mg/kg	1.785	2.963 mg/kg	0.000296 %	✓	
		023-001-00-8	215-239-8	1314-62-1							
								Total:	0.00371 %		

Key

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

Supplementary Hazardous Property Information

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"
Force this Hazardous property to non hazardous because To low to be oxidising

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00008%)

Classification of sample: TP01-1-03112021-0.15

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

Sample details

Sample name:
TP01-1-03112021-0.15
Moisture content:
21%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 21% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU 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		0.37	mg/kg		0.292	mg/kg	0.0000292 %	✓	
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		28	mg/kg	1.32	29.206	mg/kg	0.00292 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.7	mg/kg		1.343	mg/kg	0.000134 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.8	mg/kg		1.422	mg/kg	0.000142 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.9	mg/kg		1.501	mg/kg	0.00015 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		0.92	mg/kg		0.727	mg/kg	0.0000727 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.86	mg/kg		0.679	mg/kg	0.0000679 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.3	mg/kg	2.775	2.85	mg/kg	0.000285 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8	mg/kg	13.43	8.488	mg/kg	0.000849 %	✓	
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		26	mg/kg	1.462	30.02	mg/kg	0.003 %	✓	
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		1.5	mg/kg		1.185	mg/kg	0.000119 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		81	mg/kg	1.126	72.046	mg/kg	0.0072 %	✓	

#		Determinand	EU 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		0.3	mg/kg		0.237	mg/kg	0.0000237 %	✓	
19		fluoranthene		205-912-4	206-44-0		2.9	mg/kg		2.291	mg/kg	0.000229 %	✓	
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		0.83	mg/kg		0.656	mg/kg	0.0000656 %	✓	
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	170	mg/kg		134.3	mg/kg	0.0134 %	✓	
23		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.6	mg/kg	1.353	0.642	mg/kg	0.0000642 %	✓	
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		28	mg/kg	1.579	34.939	mg/kg	0.00349 %	✓	
26		pH			PH		7.4	pH		7.4	pH	7.4 pH		
27		phenanthrene		201-581-5	85-01-8		1.6	mg/kg		1.264	mg/kg	0.000126 %	✓	
28		pyrene		204-927-3	129-00-0		2.7	mg/kg		2.133	mg/kg	0.000213 %	✓	
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		150	mg/kg	1.245	147.499	mg/kg	0.0147 %	✓	
31		monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		38	mg/kg	1.785	53.591	mg/kg	0.00536 %	✓	
											Total:	0.0534 %		

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: TP03-1-03112021-0.30

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

Sample details

Sample name:
TP03-1-03112021-0.30
Moisture content:
33%
(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: 33% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		1,1-dichloroethane and 1,2-dichloroethane (combined)		203-458-1, 200-863-5	107-06-2, 75-34-3		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
2		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
5		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		27	mg/kg	1.32	23.885	mg/kg	0.00239 %	✓	
6		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1	mg/kg		0.67	mg/kg	0.000067 %	✓	
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.91	mg/kg		0.61	mg/kg	0.000061 %	✓	
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.1	mg/kg		0.737	mg/kg	0.0000737 %	✓	
10		benzo[ghi]perylene		205-883-8	191-24-2		0.6	mg/kg		0.402	mg/kg	0.0000402 %	✓	
11		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.5	mg/kg		0.335	mg/kg	0.0000335 %	✓	
12		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2	mg/kg	2.775	2.231	mg/kg	0.000223 %	✓	
13		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.3	mg/kg	13.43	2.699	mg/kg	0.00027 %	✓	
14		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**
15		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23	mg/kg	1.462	22.523	mg/kg	0.00225 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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**
17		chrysene	601-048-00-0	205-923-4	218-01-9		0.86	mg/kg		0.576	mg/kg	0.0000576 %	✓	
18		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		65	mg/kg	1.126	49.032	mg/kg	0.0049 %	✓	
19		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**
20		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**
21		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
22		fluoranthene		205-912-4	206-44-0		1.5	mg/kg		1.005	mg/kg	0.0001 %	✓	
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
24		indeno[123-cd]pyrene		205-893-2	193-39-5		0.47	mg/kg		0.315	mg/kg	0.0000315 %	✓	
25		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	160	mg/kg		107.2	mg/kg	0.0107 %	✓	
26		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.7	mg/kg	1.353	0.635	mg/kg	0.0000635 %	✓	
27		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.0001	mg/kg		<0.0001	mg/kg	<0.00000001 %		**<LOD**
28		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		25	mg/kg	1.579	26.457	mg/kg	0.00265 %	✓	
29		pH			PH		6.7	pH		6.7	pH	6.7 pH		
30		phenanthrene		201-581-5	85-01-8		0.87	mg/kg		0.583	mg/kg	0.0000583 %	✓	
31		phenol	604-001-00-2	203-632-7	108-95-2		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		**<LOD**
32		pyrene		204-927-3	129-00-0		1.4	mg/kg		0.938	mg/kg	0.0000938 %	✓	
33		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**
34		tetrachloroethylene	602-028-00-4	204-825-9	127-18-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
36		TPH (C6 to C40) petroleum group			TPH		38	mg/kg		25.46	mg/kg	0.00255 %	✓	
37		trichloroethylene; trichloroethene	602-027-00-9	201-167-4	79-01-6		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
38		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		**<LOD**
39		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		110	mg/kg	1.245	91.735	mg/kg	0.00917 %	✓	
40		hexachlorobenzene	602-065-00-6	204-273-9	118-74-1		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
41		m-cresol; [1] o-cresol; [2] p-cresol; [3] mix-cresol [4]	604-004-00-9	203-577-9 [1] 202-423-8 [2] 203-398-6 [3] 215-293-2 [4]	108-39-4 [1] 95-48-7 [2] 106-44-5 [3] 1319-77-3 [4]		<0.5 mg/kg		<0.5 mg/kg	<0.00005 %		<LOD
42		monohydric phenols			P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
43		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		34 mg/kg	1.785	40.667 mg/kg	0.00407 %	✓	
44		aniline	612-008-00-7	200-539-3	62-53-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
45		2-chlorophenol; [1] 4-chlorophenol; [2] 3-chlorophenol; [3] chlorophenol [4]	604-008-00-0	202-433-2 [1] 203-402-6 [2] 203-582-6 [3] 246-691-4 [4]	95-57-8 [1] 106-48-9 [2] 108-43-0 [3] 25167-80-0 [4]		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
46		bis(2-chloroethyl) ether	603-029-00-2	203-870-1	111-44-4		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
47		hexachloroethane		200-666-4	67-72-1		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
48		nitrobenzene	609-003-00-7	202-716-0	98-95-3		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
49		3,5,5-trimethylcyclohex-2-enone; isophorone	606-012-00-8	201-126-0	78-59-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
50		2-nitrophenol		201-857-5	88-75-5		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
51		3,4-xylenol; [1] 2,5-xylenol; [2] 2,4-xylenol; [3] 2,3-xylenol; [4] 2,6-xylenol; [5] xylenol; [6] 2,4(or 2,5)-xylenol [7]	604-006-00-X	202-439-5 [1] 202-461-5 [2] 203-321-6 [3] 208-395-3 [4] 209-400-1 [5] 215-089-3 [6] 276-245-4 [7]	95-65-8 [1] 95-87-4 [2] 105-67-9 [3] 526-75-0 [4] 576-26-1 [5] 1300-71-6 [6] 71975-58-1 [7]		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
52		bis(2-chloroethoxy)methane		203-920-2	111-91-1		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
53		2,4-dichlorophenol	604-011-00-7	204-429-6	120-83-2		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
54		4-chloroaniline	612-137-00-9	203-401-0	106-47-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
55		chlorocresol; 4-chloro-m-cresol; 4-chloro-3-methylphenol	604-014-00-3	200-431-6	59-50-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
56		2,4,6-trichlorophenol	604-018-00-5	201-795-9	88-06-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
57		2,4,5-trichlorophenol	604-017-00-X	202-467-8	95-95-4		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
58		2-methyl naphthalene		202-078-3	91-57-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
59		2-chloronaphthalene		202-079-9	91-58-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
60		dimethyl phthalate		205-011-6	131-11-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
61		2,6-dinitrotoluene	609-049-00-8	210-106-0	606-20-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
62		2,4-dinitrotoluene; [1] dinitrotoluene [2]	609-007-00-9	204-450-0 [1] 246-836-1 [2]	121-14-2 [1] 25321-14-6 [2]		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
63		dibenzofuran		205-071-3	132-64-9		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
64		4-chlorophenylphenylether		230-281-7	7005-72-3		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
65		diethyl phthalate				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		**<LOD**
			201-550-6	84-66-2									
66		o-nitroaniline; [1] m-nitroaniline; [2] p-nitroaniline [3]				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		**<LOD**
		612-012-00-9	201-855-4 [1] 202-729-1 [2] 202-810-1 [3]	88-74-4 [1] 99-09-2 [2] 100-01-6 [3]									
67		azobenzene				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**
		611-001-00-6	203-102-5	103-33-3									
68		4-bromophenylphenylether				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		**<LOD**
			202-952-4	101-55-3									
69		carbazole				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**
			201-696-0	86-74-8									
70		dibutyl phthalate; DBP				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		**<LOD**
		607-318-00-4	201-557-4	84-74-2									
71		anthraquinone				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**
		606-151-00-4	201-549-0	84-65-1									
72		BBP; benzyl butyl phthalate				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**
		607-430-00-3	201-622-7	85-68-7									
73		1,1,1-trichloroethane; methyl chloroform				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-013-00-2	200-756-3	71-55-6									
74		1,1,2,2-tetrachloroethane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-015-00-3	201-197-8	79-34-5									
75		1,1,2-trichloroethane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-014-00-8	201-166-9	79-00-5									
76		1,1-dichloroethylene; vinylidene chloride				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-025-00-8	200-864-0	75-35-4									
77		1,1-dichloropropene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-031-00-0	209-253-3	563-58-6									
78		1,2,3-trichlorobenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
			201-757-1	87-61-6									
79		1,2,4-trimethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		601-043-00-3	202-436-9	95-63-6									
80		1,2-dibromoethane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-010-00-6	203-444-5	106-93-4									
81		1,2-dichlorobenzene; o-dichlorobenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-034-00-7	202-425-9	95-50-1									
82		1,2-dichloropropane; propylene dichloride				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-020-00-0	201-152-2	78-87-5									
83		1,3-dichlorbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-067-00-7	208-792-1	541-73-1									
84		1,3-dichloropropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
			205-531-3	142-28-9									
85		1,4-dichlorobenzene; p-dichlorobenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-035-00-2	203-400-5	106-46-7									
86		2,2-dichloropropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
			209-832-0	594-20-7									
87		bromodichloromethane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
			200-856-7	75-27-4									
88		bromomethane; methylbromide				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-002-00-2	200-813-2	74-83-9									
89		bromobenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-060-00-9	203-623-8	108-86-1									
90		n-butylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
			203-209-7	104-51-8									
91		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]									
92		chlorobenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		602-033-00-1	203-628-5	108-90-7									

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
93		carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8	56-23-5		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
94		chloroethane	602-009-00-0	200-830-5	75-00-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
95		chloroform; trichloromethane	602-006-00-4	200-663-8	67-66-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
96		chloromethane; methyl chloride	602-001-00-7	200-817-4	74-87-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
97	•	dibromochloromethane		204-704-0	124-48-1		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
98		1,2-dibromo-3-chloropropane	602-021-00-6	202-479-3	96-12-8		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
99		dibromomethane	602-003-00-8	200-824-2	74-95-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
100	•	hexachlorobutadiene		201-765-5	87-68-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
101		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
102	•	4-isopropyltoluene		202-796-7	99-87-6		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
103	•	sec-butylbenzene		205-227-0	135-98-8		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
104		styrene	601-026-00-0	202-851-5	100-42-5		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
105	•	trans-1,3-dichloropropene		431-460-4	10061-02-6		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
106	•	tert-butylbenzene		202-632-4	98-06-6		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
107		bromoform; tribromomethane	602-007-00-X	200-854-6	75-25-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
108		1,2,4-trichlorobenzene	602-087-00-6	204-428-0	120-82-1		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
109	•	1,1,1,2-tetrachloroethane		211-135-1	630-20-6		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
110	•	trichlorofluoromethane		200-892-3	75-69-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
111		mesitylene; 1,3,5-trimethylbenzene	601-025-00-5	203-604-4	108-67-8		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
112		vinyl chloride; chloroethylene	602-023-00-7	200-831-0	75-01-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
113		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]	602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
114		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]	602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
115		cumene; [1] propylbenzene [2]	601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
											Total:	0.0413 %		

Key

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

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because The sample is not wet and unlikely to be flammable.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00255%)

Classification of sample: TP05-1-03112021-0.15

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

Sample details

Sample name:
TP05-1-03112021-0.15
Moisture content:
19%
(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: 19% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU 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		21	mg/kg	1.32	22.459	mg/kg	0.00225 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.95	mg/kg		0.77	mg/kg	0.000077 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.95	mg/kg		0.77	mg/kg	0.000077 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1	mg/kg		0.81	mg/kg	0.000081 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		0.59	mg/kg		0.478	mg/kg	0.0000478 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.53	mg/kg		0.429	mg/kg	0.0000429 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9	mg/kg	2.775	2.023	mg/kg	0.000202 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.3	mg/kg	13.43	3.263	mg/kg	0.000326 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24	mg/kg	1.462	28.413	mg/kg	0.00284 %	✓	
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		0.87	mg/kg		0.705	mg/kg	0.0000705 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		54	mg/kg	1.126	49.246	mg/kg	0.00492 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19		fluoranthene		205-912-4	206-44-0		1.6	mg/kg		1.296	mg/kg	0.00013 %	✓	
20		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21		indeno[123-cd]pyrene		205-893-2	193-39-5		0.47	mg/kg		0.381	mg/kg	0.0000381 %	✓	
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	130	mg/kg		105.3	mg/kg	0.0105 %	✓	
23		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		1	mg/kg	1.353	1.096	mg/kg	0.00011 %	✓	
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]		19	mg/kg	1.579	24.308	mg/kg	0.00243 %	✓	
26		pH			PH		7.5	pH		7.5	pH	7.5 pH		
27		phenanthrene		201-581-5	85-01-8		0.79	mg/kg		0.64	mg/kg	0.000064 %	✓	
28		pyrene		204-927-3	129-00-0		1.4	mg/kg		1.134	mg/kg	0.000113 %	✓	
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		99	mg/kg	1.245	99.814	mg/kg	0.00998 %	✓	
31		monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		26	mg/kg	1.785	37.596	mg/kg	0.00376 %	✓	
											Total:	0.0388 %		

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 GB MCL 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**

GB MCL index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
20 Nov 2021 - 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

GB MCL index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

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: Muta. 2; H341 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 2; H373 , Skin Corr. 1B; H314 , Skin Corr. 1B; H314 >= 3 % , Skin Irrit. 2; H315 1 £ conc. < 3 % , Eye Irrit. 2; H319 1 £ conc. < 3 % , Aquatic Chronic 2; H411

1,1-dichloroethane and 1,2-dichloroethane (combined) (EC Number: 203-458-1, 200-863-5, CAS Number: 107-06-2, 75-34-3)

Description/Comments: Combines the hazard statements and risk phrases for 1,1-dichloroethane and 1,2-dichloroethane
Data source: N/a
Data source date: 14 Oct 2016
Hazard Statements: Flam. Liq. 2; H225 , Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 1B; H350 , Aquatic Chronic 3; H412

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

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

hexachloroethane (EC Number: 200-666-4, CAS Number: 67-72-1)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , STOT RE 2; H373

- **2-nitrophenol** (EC Number: 201-857-5, CAS Number: 88-75-5)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , STOT RE 2; H373 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **bis(2-chloroethoxy)methane** (EC Number: 203-920-2, CAS Number: 111-91-1)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 3; H301 , Acute Tox. 4; H312 , Acute Tox. 1; H330 , Acute Tox. 2; H330 , STOT SE 1; H370 , STOT RE 2; H373

- **2-methyl naphthalene** (EC Number: 202-078-3, CAS Number: 91-57-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , STOT SE 3; H336 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **2-chloronaphthalene** (EC Number: 202-079-9, CAS Number: 91-58-7)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

- **dimethyl phthalate** (EC Number: 205-011-6, CAS Number: 131-11-3)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , STOT SE 3; H335 , STOT SE 3; H336 , Repr. 2; H361 , Aquatic Chronic 3; H412

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

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

- **4-chlorophenylphenylether** (EC Number: 230-281-7, CAS Number: 7005-72-3)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **diethyl phthalate** (EC Number: 201-550-6, CAS Number: 84-66-2)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Skin Irrit. 2; H315 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , STOT SE 3; H335 , STOT RE 2; H373 , Repr. 2; H361 , Acute Tox. 4; H302 , STOT SE 3; H336 , Skin Sens. 1; H317 , Aquatic Chronic 1; H410

- **4-bromophenylphenylether** (EC Number: 202-952-4, CAS Number: 101-55-3)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

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

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

- **1,2,3-trichlorobenzene** (EC Number: 201-757-1, CAS Number: 87-61-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , STOT SE 3; H336 , Aquatic Acute 1; H400 , Aquatic Chronic 3; H410

- **1,3-dichloropropane** (EC Number: 205-531-3, CAS Number: 142-28-9)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H332 , Flam. Liq. 2; H225 , Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335

- **2,2-dichloropropane** (EC Number: 209-832-0, CAS Number: 594-20-7)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H332 , Flam. Liq. 2; H225 , Acute Tox. 4; H302 , Acute Tox. 4; H312 , Eye Irrit. 2; H319

- **bromodichloromethane** (EC Number: 200-856-7, CAS Number: 75-27-4)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 1A; H360

- **n-butylbenzene** (EC Number: 203-209-7, CAS Number: 104-51-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **dibromochloromethane** (EC Number: 204-704-0, CAS Number: 124-48-1)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 3;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , STOT SE 3; H336 , Muta. 2; H341 , Aquatic Chronic 2; H411

- **hexachlorobutadiene** (EC Number: 201-765-5, CAS Number: 87-68-3)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 3;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 3; H301 , Acute Tox. 2; H310 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Irrit. 2; H319 , Acute Tox. 2; H330 , Carc. 2; H351 , Repr. 2; H361 , STOT SE 2; H371 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **4-isopropyltoluene** (EC Number: 202-796-7, CAS Number: 99-87-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Chronic 2; H411

- **sec-butylbenzene** (EC Number: 205-227-0, CAS Number: 135-98-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Aquatic Chronic 2; H411

- **trans-1,3-dichloropropene** (EC Number: 431-460-4, CAS Number: 10061-02-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Acute Tox. 3; H301 , Asp. Tox. 1; H304 , Acute Tox. 3; H311 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , Aquatic Chronic 1; H410

- **tert-butylbenzene** (EC Number: 202-632-4, CAS Number: 98-06-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , Acute Tox. 4; H332 , STOT SE 3; H335 , Asp. Tox. 1; H304 , Aquatic Chronic 2; H411

- **1,1,1,2-tetrachloroethane** (EC Number: 211-135-1, CAS Number: 630-20-6)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , Eye Dam. 1; H318 , Acute Tox. 4; H332 , Carc. 2; H351 , Acute Tox. 4; H312 , Aquatic Chronic 3; H412 , Skin Irrit. 2; H315

- **trichlorofluoromethane** (EC Number: 200-892-3, CAS Number: 75-69-4)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H312 , Ozone 1; H420

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

beryllium {beryllium oxide}

Worst case species based on hazard statements

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

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

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

Worst case species based on hazard statements

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

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Worst case species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

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

Worst case species based on hazard statements

zinc {zinc oxide}

Worst case species based on hazard statements

vanadium {divanadium pentaoxide; vanadium pentoxide}

Worst case species based on hazard statements.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2021.347.4961.9421 (13 Dec 2021)
HazWasteOnline Database: 2021.347.4961.9421 (13 Dec 2021)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021

Appendix F Plausible Source-Pathway-Receptor Contaminant Linkages

Summary of Potential Contaminant Linkages

Table F.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 F.1). Further information is given in the relevant Hydrock methodology, referenced in Appendix G, 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 F.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 F.2: Exposure model – final source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Made Ground below the site (asbestos).	Inhalation of fugitive dust.	Site users.	Unlikely	Severe	Low	There is Made Ground below the entire site, and asbestos fibres (<0.001%v/v of chrysotile) have been proven to be present in the soil.	Contact with these materials is likely in areas of soft landscaping. Mitigation measures will be required to ensure risks to site users remains negligible.
		Neighbours.					The risk of significant generation of dust is likely only during site development process and can therefore be controlled. Suppression should be included in control measures.
Made Ground in the northeast of the site (petroleum hydrocarbons (TPH)).	Direct contact	Plastic pipes for drains and sewers	Likely	Medium	Moderate	There is Made Ground below the entire site, and there are concentrations of the TPH above 200 mg/kg, in three samples from the northeast corner of the site. Direct contact with plastic pipes is therefore likely. The pipework manufacturer should be consulted with regard the suitability of the pipework and mitigation measures may be required to break the SPR linkage.	
Ground gases (carbon dioxide and methane) from organic materials in the Peat below the site.	Migration, build up and asphyxiation.	Site users.	Low likelihood	Medium to Severe	Low to Moderate	CIRIA C665 characteristic situation 2. Mitigation required by the installation of suitable gas resistant membrane. To be installed by trained installer. To be validated and verified.	
		Neighbours.		Medium Moderate			

Appendix G 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
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
014	Asbestos in Soils	001	30/07/2018
015	Remediation and Mitigation (New Methodology)	001	30/07/2018