



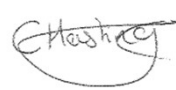
GROUNDTECH
CONSULTING

816 STOCKPORT ROAD

GEO-ENVIRONMENTAL APPRAISAL

RAJA ASAD

JUNE 2025

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CLIENT CONTACT	-
For and Behalf of Groundtech Consulting	
SIGNATURE	
AUTHOR	Lucy Denman Engineer MSci (Hons) FGS
SIGNATURE	
CHECKED	Connor Hastings BSc (Hons) FGS
SIGNATURE	
REVIEWED	James Doyle BSc (Hons) CGeol FGS

SUMMARY

Site Details	
Site Location	<i>The site is located circa 4.9km south west of Manchester City Centre and is approximately centred on National Grid Reference 387314, 394700.</i>
Site Area	<p><i>The site is approximately 0.04 hectares in area and square shaped and has level topography.</i></p> <p><i>Two single-storey warehouses are present in the western extent of the site constructed from corrugated metal sheeting. Both warehouses were operational at the time of the Ground Investigation. One unit operated as a vehicle repairs shop and the other as a carpet warehouse.</i></p> <p><i>The remainder of the site is used as a yard by both businesses and is entirely surfaced with black tarmac. A skip was present in the eastern extent of the site, in the vicinity of the gated entrance off Stockport Road. A small hut used as a bathroom and unspecified barrels were present on the southern site boundary.</i></p>
Ground Model	
Made Ground	<p><i>The tarmac surfacing was encountered in all exploratory boreholes between depths of 0.1m and 0.15m begl.</i></p> <p><i>Made Ground was encountered at a maximum depth of 1.5m begl, but was generally encountered between 0.5m and 0.8m begl. Two main Made Ground populations were encountered, consisting of one cohesive stratum and one granular.</i></p> <p><i>The cohesive stratum was exclusively encountered within exploratory borehole WS01 and comprised soft reworked grey to brown slightly sandy gravelly clay with minor constituents of brick, sandstone, coal and ceramics. The granular strata was encountered in all exploratory boreholes and generally consisted of black to brown ashy very gravelly sand with minor constituents of brick, coal, glass, ceramics, sandstone and siltstone.</i></p>
Natural Soils	<i>Natural strata was encountered in all exploratory boreholes between depths of 0.5m and 10.9m begl and comprised firm to stiff orange to grey slightly gravelly very sandy Clay with minor constituents of sandstone and coal.</i>
Bedrock	<i>Bedrock was encountered between depths of 10.9m and 12.9m begl in CP01 and confirmed the published geological records. The bedrock strata comprised reddish brown residually weathered Sandstone from the Chester Formation, recovered as reddish brown gravelly clayey fine sand with clay lenses.</i>
Groundwater	<i>Groundwater strikes were observed in exploratory boreholes WS01 and CP01 at depths of 3.0m and 4.5m begl respectively.</i>
Ground Engineering Assessment	
Foundations	<p><i>The most suitable foundations are considered to be strip/trench or pad foundations constructed in the firm to stiff medium to high strength Clay at a minimum depth of 0.9m beg and a safe Allowable Bearing Pressure of 130kPa has been calculated. Foundations are to be deepened if deep Made Ground or soft Clay are encountered.</i></p> <p><i>Depending on the loadings a driven piled foundation solution may be required. For a driven pile 12m in length end bearing in the Sandstone deposits beneath the site a vertical allowable load of 500kN has</i></p>

Highways	<i>been calculated. Additionally for a single driven pile 8m in length end bearing in the high strength clay deposits a vertical allowable load of 250kN has been calculated.</i>
	<i>CBR values of 2% to 3% are likely to be achieved in undisturbed natural cohesive soils for pavement design purposes.</i>
	<i>Untreated Made Ground should be assumed to have a CBR value of less than 5% unless proven otherwise.</i>
Constraints	<i>The main limitation was access during the investigation. All below ground substructure and hardsurfacing associated with the current buildings onsite and tarmac surfacing require grubbing up as part of the enabling works.</i>
	<i>A watching brief should be maintained during the demolition of the existing building to identify any evidence of contamination and to confirm that ground conditions beneath the building are consistent with the rest of the site.</i>
	<i>Made Ground was encountered to a maximum depth of 1.5m begl in WS01 and foundations will need to be deepened in the vicinity of WS01 and any other areas of deep Made Ground.</i>
	<i>Consideration should be given to the existing surrounding properties during demolition and installation of foundations.</i>
GQRA and Revised (PL) Assessment	
Human Health	<i>Elevated concentrations of heavy metals, speciated hydrocarbons and speciated PAHs were recorded in the granular Made Ground when compared against residential without plant uptake screening values. Asbestos fibres and cement were detected within a single sample. The risk to Human Health is considered to be Moderate.</i>
	<i>A 600mm cover system should be installed in the communal residential garden area comprising 150mm Topsoil and 450mm subsoil where Made Ground is present at formation level underlain by a demarcation membrane or hard dig layer.</i>
	<i>ACMs should be hand picked during the enabling and ground works and disposed to a suitably licensed waste facility.</i>
Controlled Waters	<i>No mobile contamination has been encountered and the risk to controlled waters is considered to be Low as a significant aquitard is considered to exist beneath the site.</i>
Permanent Ground Gas	<i>The GSV values and typical maximum concentrations for carbon dioxide are below the assessment criteria for CS1, and no methane was detected across any monitoring visits, therefore the risk of ground gas to human health is Low. No gas precautions are necessary.</i>
	<i>The site is not located in an area where radon protection measures are required.</i>
	<i>A vapour risk has been identified at the site due to elevated concentrations of Naphthalene and a vapour resistant membrane is required at present. If the contaminated Made Ground deposits are removed from the site then the source of vapours is removed and a vapour resistant membrane is not required.</i>
Final Appraisal	



The following is required to progress the site to construction phase:

- *Watching brief/investigation beneath existing building post demolition*
 - *Demolition Asbestos survey*
 - *Detailed Foundation design*
 - *Confirmation of recommendations made in this appraisal with regulators*
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Plans

<i>Plan Reference</i>	<i>Revision</i>	<i>Title</i>
<i>GRO-24090-P01</i>	-	<i>Project Location Plan</i>
<i>GRO-24090-P04</i>	-	<i>Exploratory Hole Location Plan</i>
<i>GRO-24090-P05</i>	-	<i>Generalised Ground Model</i>
<i>GRO-24090-P06</i>	-	<i>Revised Illustrative Conceptual Site Model (CSM)</i>
<i>GRO-24090-P07</i>	-	<i>Contamination Plan</i>

1.0 INTRODUCTION

1.1 Project Objectives

Groundtech Consulting Limited have been instructed by Bell Munro Consulting Ltd to undertake a Ground Investigation for a site at 816 Stockport Road in Levenshulme.

The following previous reporting has been undertaken for the site:

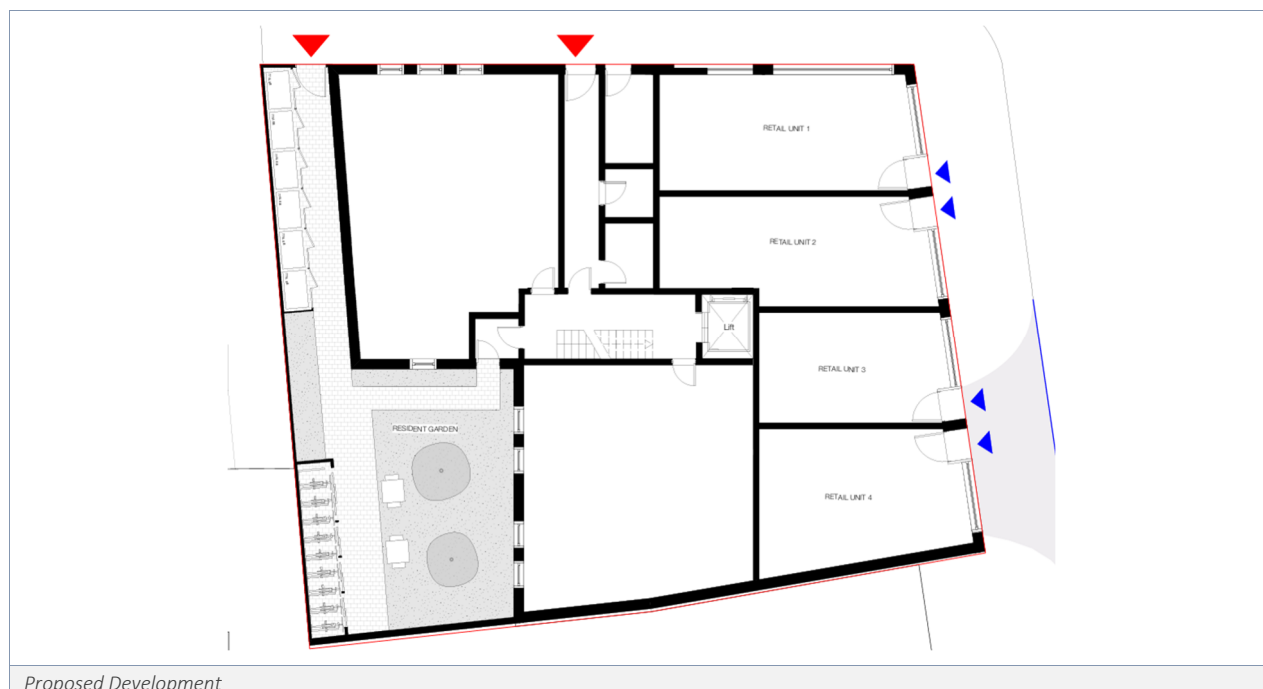
- *Groundtech Consulting - Preliminary Risk Assessment referenced GRO-24090-4138 dated May 2024.*

A summary of the relevant information is provided in *Section 3.0*.

A main investigation was undertaken in accordance with BS 5930:2020, BS 10175:2017, BS 8576:2013 and Eurocode 7 to revise the CSM and quantify the level of risk identified in the PRA. The Appraisal has been prepared in accordance with current UK Legislation and to discharge Land Quality pre-commencement planning conditions.

1.2 Proposed Development

The proposed development is residential/commercial end use comprising 16 residential apartments and four ground floor retail units. Associated soft and hard-landscaping features include a residential communal garden, access roads, refuse bins and car parking.



1.3 Limitations

Other conditions may exist on the site that have not been taken into account in this assessment as they are outside the scope of works. Groundtech Consulting are not responsible for these circumstances that are not outlined in the report.

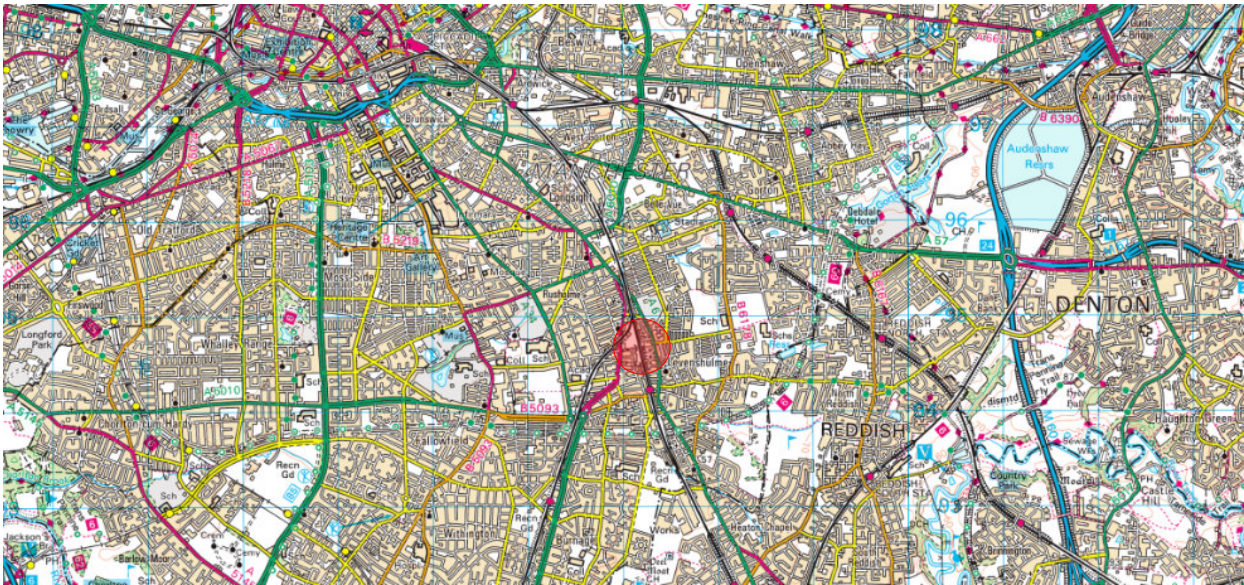


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2.0 SITE SETTING

2.1 Location

The site is located circa 4.9km south of Manchester City Centre, as shown on the Project Location Plan GRO-24090-P01. The site is approximately centred on National Grid Reference 387314, 394700.



Site Location

Access to the site is gained off Stockport Road to the east of the site or Midway Street to the north.

2.2 Site Description

The site is square in shape covering an area of approximately 0.04 hectares. The topography of the site is level comprising a tarmac surfaced yard on the eastern area and commercial units line the western site boundary, which were operational at the time of the Ground Investigation.

The warehouse units are single storey and constructed from corrugated metal sheeting, the eastern facing wall of these units contain roller shutters. A mechanical works/garage occupies the two south western units associated with "Sabhar Auto Repairs". A concrete slab is present at surface here however there are no inspection pits or hydraulic lifts associated with this garage.

Two units found in the north western extent are associated with "Lifestyle Flooring" and are utilised for storage of carpets. Internally to the warehouses a large number of rolls of carpet were observed on racking and a concrete slab is present at the surface.

The hardsurfacing on the eastern area of the site comprises degraded tarmac with potholes throughout.

A skip along with areas of household waste are present within the eastern area of the site. Unspecified barrels are present along the southern boundary and a small hut comprising a bathroom is located in the south western corner.



Site Boundaries and Surrounding Area

The site is bound by the rear walls of the warehouse units to the west. The northern and eastern boundaries comprise wooden fencing, centrally to this fencing framing is still present which appears to have previously contained advertising boards. The southern boundary comprises a brick wall associated with an adjacent commercial property.

The site is surrounded by following features/land uses:

- *North* - *Midway Street and Residential Properties*
- *East* - *Stockport Road and Residential/Commercial Properties*
- *South* - *Residential/Commercial Properties*
- *West* - *Residential Properties followed by a Railway Line*

Site photographs are presented in *Appendix 2*.

3.0 SUMMARY OF PREVIOUS REPORTS

3.1 Introduction

The following previous report has been undertaken for the site:

- *Groundtech Consulting - Preliminary Risk Assessment referenced GRO-24090-4138 dated May 2024.*

A summary of the relevant information is provided below.

3.2 Historical Information

Earliest historic maps dating back to 1848, indicate the site was initially undeveloped used as garden space for surrounding residents. Between 1890 and 1892, the site remained unoccupied, possibly used as yard space for commercial activities off of Stockport Road. Historical maps from 1907 show the first establishment of a commercial property on site. By 1956, a coal yard was present on site, which became non-operational by 1994. There were no changes until 2024, whereby two warehouse units occupy the site.

The area surrounding the site have historically predominantly been used for commercial end use. Notably, railway, garages, neon sign works and leisure activities such as bowling greens and tennis courts. Numerous infilled ponds are found circa 250m of the site, the closest being 50m south of the site.

3.3 Geology & Hydrogeology

Made Ground

No Made Ground or Artificial Ground is indicated to underlie the site from available geological maps, however Made Ground is anticipated associated with the former commercial developments.

Superficial & Bedrock Geology

The site is indicated to be underlain by Glacial Till (Secondary Undifferentiated Aquifer) which consists of clay, silt, sand and gravel. Nearby BGS borehole records indicate that the superficial deposits are circa 14m thick.

The solid geology is indicated to be the Chester Sandstone Formation (Principal Aquifer) which consists of sandstone.

The site is not located within 500m of a Source Protection Zone (SPZ) and there are no groundwater abstractions within 500m of site.

Faults

No faults are shown on or within an influencing distance of the site.

3.4 Hydrology

The nearest surface water feature is the Platt Brook river located 814m north west of the site.

There are no surface water abstractions within 2000m of the site.

3.5 Environmental Information

The following environmental information was identified:

- The site is not in a radon affected area
- There is one historical landfill located 409m east of the site
- There are two petrol stations within 500m of the site, one 150m north and the other 344m north west
- There are 19 recent industrial land uses within 250m of the site, the nearest being 10m south east of site associated with vehicle repair and servicing.
- The Risk of Flood from Rivers and Sea (RoFRaS) is Low

3.6 Risk Assessment

The risks identified by the Preliminary Risk Assessment are summarised in the tables below:

Human Health

Receptor	Level of Risk	Comments
Site End Users	Moderate	Made Ground is likely present at the site associated with previous developments. On site sources of contamination identified including a vehicle garage
Ground Gas	Moderate to Low	Infilled ponds in the vicinity of the site. Additionally, due to the site being used as a garage, a Moderate risk from vapours has been identified.

Controlled Waters

Receptor	Level of Risk	Comments
Aquifers	Low	Gross hydrocarbon contamination unlikely present at site, Glacial Till indicated to be present beneath the site which will act as an aquitard.
Surface Waters	Low	No significant sources of mobile contamination identified at the site.

4.0 SCOPE OF INVESTIGATION AND RATIONALE

4.1 Project Objectives

The aim of the fieldwork was to:

Determine the stratification beneath the site
Maintain watching brief for visual and olfactory evidence of contamination
Obtain samples using methodology in current guidance for contamination and geotechnical testing
Identify realistic pollution linkages to groundwater
Obtain relevant geotechnical parameters for preliminary foundation design to address both ULS and SLS conditions
Determine if targeted supplementary investigation in areas of concern is required
Install monitoring standpipes for gas and groundwater monitoring
Assess the identified pollution linkages in the Conceptual Site Model (CSM)

4.2 Scope of Works

The following scope of works was completed on the 1st of April 2025:

- 1 No. Cable Percussive borehole (CP01) was advanced to a depth of 12.9m begl using a Dando 150 Cable Percussive rig.
- 4 No. Windowless sample boreholes (WS01 to WS04) were advanced to depths of between 3.0m and 5.0m begl using a Dando Terrier window sampling rig.

The exploratory hole locations are presented on Groundtech Plan GRO-24090-P04 and the exploratory hole logs are in Appendix 3.

The exploratory holes were positioned to establish the stratification beneath the site and target any areas of concern as summarised in the table below:

Location	Target Rationale
WS01 to WS04, CP01	Proposed residential/commercial building
WS04	Existing Garage
WS03	Existing Oil Barrels
WS01 to WS04, CP01	Former Coal Yard

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

- BS 5930 'Code of Practice for Site Investigations' 2020
- BS EN 14688-1:2002 'Geotechnical Investigation and Testing - Identification and classification of soil'
- BS EN ISO 14689:2002 "Geotechnical investigation and testing - Identification and classification of rock"

4.3 Soil Sampling

During the intrusive investigation, representative samples were taken at regular intervals, changes of strata and where evidence of contamination existed. Laboratory analysis was scheduled on the samples obtained.

The samples obtained are summarised in the table below:

Soil Sample	Number
<i>Environmental Sample</i>	<i>14</i>
<i>Disturbed Sample</i>	<i>37</i>
<i>Undisturbed U100 Sample</i>	<i>6</i>

The samples have been obtained in accordance with current environmental and geotechnical guidance. The sampling plan has been designed obtain samples from all required strata using the correct methodology.

Disturbed samples of soil for geo-environmental testing were placed in the correct sampling containers as required by the laboratory in accordance with their MCERTS and UKAS Accreditation. Transportation was arranged in a timely manner and the samples were at the correct temperature

The sample locations and depths are recorded on the exploratory logs.

4.4 Laboratory Testing

To inform the Generic Quantitative Risk Assessment, the following geo-environmental testing was scheduled to assess the risk from contamination on the site. The testing is based on the potential sources identified in the PRA and observations during the Ground Investigation.

Contaminant of Concern (CoC)	Matrix	Number
<i>Arsenic, cadmium, chromium (total and hexavalent), copper, lead, mercury, nickel, selenium, zinc and pH</i>	<i>Soil</i>	<i>4</i>
<i>Total Petroleum Hydrocarbons inc BTEX (TPH CWG)</i>	<i>Soil</i>	<i>4</i>
<i>Speciated PAH16</i>	<i>Soil</i>	<i>4</i>
<i>Asbestos Identification</i>	<i>Soil</i>	<i>4</i>
<i>Asbestos Quantification</i>	<i>Soil</i>	<i>1</i>

The Geo-Environmental Laboratory Testing Results are presented in *Appendix 4*.

Representative disturbed samples were obtained for all soil types encountered. Selected samples were scheduled for testing at an approved laboratory in accordance with BS 1377 'Method of Test for Soils for Civil Engineering Purposes' 1990. The following tests were scheduled:

British Standard	Test Method	Number
<i>Part 2</i>	<i>Water Content</i>	<i>4</i>
<i>Part 2</i>	<i>Plasticity Index Analysis</i>	<i>4</i>
<i>Part 3</i>	<i>pH Value</i>	<i>4</i>
<i>Part 3</i>	<i>Water Soluble Sulphate Content</i>	<i>4</i>
<i>Part 7</i>	<i>Determination of Undrained Shear Strength in Triaxial Compression</i>	<i>3</i>

The Geotechnical Laboratory Testing Results are presented in *Appendix 5*.

4.5 Gas and Groundwater Monitoring/Sampling

Gas and groundwater monitoring installations were constructed in the boreholes. The standpipes consisted of high-density polyethylene (HDPE) pipe - a bentonite seal was placed around the plain pipe and a clean gravel pack was placed around the slotted pipe. A summary of the installation construction is presented in the table below:

Location	Depth (m)	Response Zone (m begl)	Targeted Strata	Reason
WS01	5.00	1.50 - 5.00	Made Ground and Clay	Ground Gas
WS03	3.50	0.50 - 3.50	Clay	Ground Gas
WS04	3.50	1.00 - 3.50	Made Ground and Clay	Ground Gas

Permanent gas and flow rate monitoring was carried out using GFM 436 infrared gas monitor with integral electronic flow analyser. The measurements taken are listed below:

- Oxygen (O₂), carbon dioxide (CO₂) and methane (C H₄) as the percentage volume in air (%v/v)
- Hydrogen sulphide (H₂S) and carbon monoxide (CO) as the percentage volume in air (%v/v)
- Lower Explosive Limit (%LEL) of methane
- Atmospheric and borehole pressure, including pressure trend
- Flow measurements (l/hr)
- Weather and ground surface conditions

Both peak and steady state conditions were monitored to understand the behaviour of the permanent ground gas, the steady state conditions were recorded by allowing the gas monitor to run for a minimum of 3 minutes or steady state was reached.

Permanent gas and groundwater monitoring results are presented in *Appendix 6*.

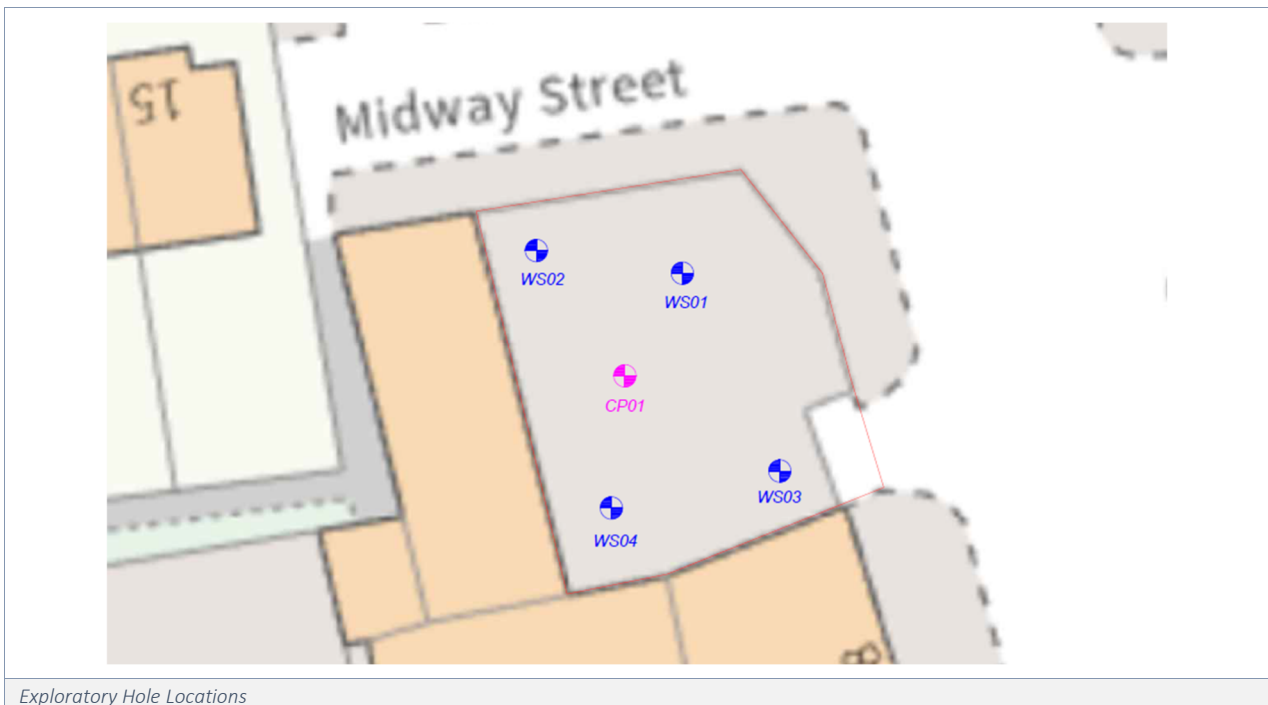
5.0 GROUND MODEL

5.1 Made Ground

The surfacing of the site consisted of black degraded tarmac, which was encountered in all exploratory boreholes to depths of between 0.1m and 0.15m begl.

Made Ground was encountered to a maximum depth of 1.5m begl during the Ground Investigation. Two main Made Ground populations were encountered during the investigation and are described below:

1. *Black to brown ashy very gravelly sand with minor constituents of brick, coal, glass, ceramics, sandstone and siltstone in all exploratory boreholes between depths of 0.1m and 0.8m begl.*
2. *Soft reworked grey to brown slightly sandy gravelly clay with minor constituents of brick, sandstone, coal and ceramics in WS01 in the north eastern area of the site between the depths of 0.6m and 1.5m begl.*



5.2 Natural Ground

The natural strata encountered generally confirmed the published geological records of Glacial Till. One main natural stratification was encountered during the investigation and consisted of firm to stiff orange grey slightly gravelly very sandy Clay with minor constituents of sandstone and coal from 0.5m to a maximum depth of 10.9m begl.

5.3 Bedrock

Bedrock geology encountered confirmed published geological records of the Chester Sandstone Formation, reddish brown Sandstone, residually weathered recovered as gravelly clayey fine sand with clay lenses was encountered in CP01 between depths of 10.9m and 12.9m begl. Bedrock geology was exclusively encountered within CP01 and was terminated due to refusal on sandstone.

5.4 Groundwater

Groundwater seepages were observed in WS01 at 3.0m and within CP01 at 4.5m begl.

5.5 Watching Brief

A watching brief was maintained during the Ground Investigation for visual and olfactory evidence of contamination. No olfactory evidence of contamination was noted during the Ground Investigation.

5.6 Excavation Stability

No evidence of spalling or collapse was noted during the drilling of boreholes.

5.7 Excavation Progress

WS02, WS03 and WS04 were terminated at a depth of 3.0m begl due to SPT 'N' Value refusals in the very stiff superficial Clay deposits.

Additionally, within exploratory borehole CP01, an SPT refusal occurred at a depth of 11.9m begl. Chiselling was undertaken for 1 hour and another SPT refusal was encountered at 12.9m begl.

6.0 GROUND ENGINEERING

6.1 Geotechnical Testing Results

Comparison of water content and the value of 0.4 times the Liquid Limit in accordance with BRE Digest 412 'Desiccation in Clay Soils' suggests significant desiccation has taken place when 0.4 times the Liquid Limit is greater than the actual water measured water content. This is a rudimentary method but also a good guide.

Results of the plasticity testing and the volume change potential of the Clay is summarised in the table below:

Reference	Depth (m begl)	Modified PI	Volume Change Potential	Desiccated
WS01	2.00 - 2.45	20.68	Medium	Yes
WS02	1.00	19.53	Low	No
WS03	1.20 - 1.65	16.15	Low	No
WS04	2.00 - 2.45	15.20	Low	Yes

Results of the Quick Undrained Triaxial testing are summarised in the table below:

Reference	Depth (m begl)	Undrained Shear Strength (kPa)	Relative Strength
CP01	3.00 - 3.45	68	Medium
CP01	5.00 - 5.45	138	High
WS02	1.50 - 2.00	124	High

6.2 Assessment Background

The ground engineering investigation has been undertaken to formulate an accurate ground model in order to undertake preliminary foundation design. The ground model has been constructed with a moderate to high level of confidence.

Background

Earliest historic maps dating back to 1848, indicate the site was initially undeveloped, used as garden space for surrounding residents. Between 1890 and 1892, the site remained unoccupied, possibly used as yard space for commercial activities off of Stockport Road. Historical maps from 1907 show the first establishment of a commercial property on site. By 1956, a coal yard was present on site, which became non-operational by 1994. There were no changes until 2024, whereby two warehouse units occupy the site.

At the time of the Ground Investigation, the warehouses on site were active. In the south western extent of the site, two single-storey buildings were operating as a garage (Shahbaz Auto Repairs). In the north western area of the site, a further two warehouse units were operating as a carpet warehouse (Lifestyle Flooring). A skip was present at the entrance to the site on Stockport Road and in the north eastern corner a small hut comprising a bathroom was situated. The remainder of the site was used as car parking and storage for carpet materials. Additionally, unspecified barrels were noted along the southern boundary.

The proposed development is residential/commercial end use comprising the demolition of existing buildings and construction of a three-storey building incorporating 16 apartments and four ground-floor commercial units. A shared residents garden is proposed in the south eastern extent of the site. Hardstanding external areas will be established for access, parking and bin storage located between the apartment structures, accessed via a gated entrance from Stockport Road to the south east.

Ground Conditions

The site was entirely surfaced by tarmac to depths of between 0.1m and 0.15m begl, underlain by a mixture of granular and cohesive Made Ground to depths of between 0.5m and 1.5m begl. Superficial deposits were encountered beneath the Made Ground and comprised cohesive Clay with minor constituents of sandstone and coal between depths of 0.5m and 10.9m begl. Bedrock was encountered between depths of 10.9m and 12.9m begl and comprised Sandstone from the Chester Sandstone Formation.

Groundwater seepages were encountered during the Ground Investigation within exploratory boreholes WS01 and CP01 at a depth of 3.0m and 4.5m begl respectively. The groundwater was recorded as a strike and was found within the cohesive clay deposits.

No risk from flooding is present at the site based on EA information.

Limitations

The main limitation was the inaccessible areas due to existing building structures, a watching brief should be maintained during the demolition of the existing buildings and further investigation may be required if the ground conditions are not consistent in these areas.

All below ground substructures and hardsurfacing associated with the demolition of the current buildings on site and tarmac surfacing will require grubbing up as part of the enabling works.

The proposed development is for the construction of three-storey apartment buildings, given the anticipated high loadings associated with the proposed development, shallow foundations may not be suitable and deep foundation solutions may be necessary.

Consideration should be given to the existing surrounding properties, in particular residential housing located on Midway Street during demolition as these properties are adjoined on the southern boundary.

6.3 Geotechnical Parameters

The geotechnical test results have been evaluated to derive geotechnical parameters for the soils underlying the site. A 'Depth to Cu' and 'Depth to SPT N' value graph is presented in *Appendix 1* to provide a generalised ground model for the site.

Characterisation of the geotechnical parameters above has been undertaken to select a characteristic value, which is a cautious estimate of the value affecting the occurrence of the limit state. The characteristic values for the Ultimate Limit State (ULS) conditions selected are presented in the table below:

Stratum	Parameter	Selected Characteristic Value
Medium Strength Clay	Undrained Shear Strength (C_u)	65kPa
High Strength Clay	Undrained Shear Strength (C_u)	125kPa
Sandstone	Drained angle of friction (ϕ')	33°

6.4 Preliminary Foundation Design

Shallow Foundations

The most suitable foundations for the proposed development are considered to be strip/trench and pad foundations cast within the firm to stiff medium to high strength Clay encountered at a minimum depth of 0.9m begl outside the influence of trees. The volume change potential of the clay is considered to be Low to Medium.

Made Ground was generally encountered to a maximum depth of 0.8m begl. However, within exploratory borehole WS01, Made Ground was encountered to a depth of 1.5m begl. Therefore, in the vicinity of WS01, foundations should be stepped/deepened accordingly to ensure they are constructed below the Made Ground. Similarly, foundations should be deepened if soft clay is encountered at formation level.

Groundwater seepages were encountered within exploratory borehole WS01 at 3.0m begl and CP01 at 4.5m begl. If shallow foundations are installed, they should be formed above the groundwater table to avoid potential issues related to water ingress and reduced bearing capacity.

A Preliminary foundation design has been undertaken by calculation for strip/trench and pad foundations founding between 1.0m and 1.5m begl in the firm to stiff medium to high strength Clay, a safe Allowable Bearing Pressure (APB) of 130kN/m² has been calculated.

Explicit settlement calculations have been undertaken and settlement will be less than 25mm. The angle of distortion should also be assessed when the foundation layout becomes available.

Existing properties are located adjacent to the site to the south. Proposed foundations should be designed as such that these do not surcharge or undermine the existing foundations associated with the existing building.

Alternative Foundation Option – Driven Piles

Alternatively, dependant on the proposed loadings a piled foundation solution may be required, the most suitable pile solution is considered to be driven piles transferring loads through the underlying Made Ground and superficial deposits to end bear in the Sandstone Bedrock Deposits.

Piled Solution – Design by Calculation

Preliminary design by calculation has been carried out using due skill and care using the global factor of safety method for pile design. The preliminary design by calculation is based on the following ground model encountered in CP01:

- *Made Ground to 0.7m begl*
- *Soft Clay to 1.2m begl*
- *Medium strength Clay to 5.0m begl*
- *High Strength Clay to 10.9m begl*
- *Sandstone Bedrock to 12.9m*

For a single round pile 225mm in diameter end bearing in the Sandstone Bedrock deposits at 12.0m begl, a vertical allowable load of 500kN has been calculated. If greater loads are required, the diameter of the piles should be increased and or the piles installed in groups. This should be considered once the loadings are confirmed.

Additionally for a single round pile 225mm in diameter end bearing in the high strength clay at 8.0m begl, a vertical allowable load of 250kN has been calculated.

The ground conditions indicate that downdrag will not be an issue and has not been taken into consideration in the preliminary design.

It is recommended that the piles are bottom driven to avoid causing unnecessary ground vibrations to the adjacent buildings.

An appropriate working platform should be constructed in accordance with BR470 guidance.

Design Validation

The piling type, length, depth of reinforcement and design should be discussed with a specialist piling contractor, it should also be discussed if CFA piles are required. They can then undertake the detailed design including drawings and specifications to provide fitness for purpose design.

The piling works should be carried out in accordance with Execution Standard EN 1536 for Bored Piles.

Construction Recommendations

The recommendations in this appraisal are preliminary and the detailed design should be developed in advance and during the construction phase. If the ground conditions or groundwater regime encountered during the construction phase differ significantly to the conditions encountered during the Ground Investigation, work should cease and Groundtech Consulting contacted for further advice.

During the construction phase, supervision by a suitably qualified geotechnical engineer should be on a continuous basis to check the design assumptions are correct and construction conforms to design in accordance with Eurocode 7 (EC7). Supervision should include inspections, Control Ground Investigations and monitoring by a suitably qualified geotechnical engineer.

6.5 Building Near Trees

No trees have been identified at the site or in the surrounding area.

All foundations should be deepened below roots of greater than 5mm diameter during excavations for footings. The clay is of a low to medium volume change potential.

A survey of all trees and hedges on the site and within 30m of the site boundary should be undertaken to identify tree species, locations and heights. This information will be required in order to assess the effects of trees on the cohesive strata and inform a foundation schedule.

Where foundation depths due to trees already present or recently removed exceeds 1.5m there is a possibility for heave to occur on removal of the tree. NHBC Guidance states that for low to medium volume change potential clay, a 25mm void should be present against the site of a foundation.

6.6 Floor Slabs

Where foundation depths due to trees already present or recently removed exceeds 1.5m there is a possibility for heave to occur on removal of the tree. Appropriate guidance states that in areas where volume change potential is low to medium, a 100mm void should be present under ground beams and suspended in-situ floor slabs.

If required ground bearing floor slabs may generally be adopted at the site provided that once finished levels have been established, less than 600mm of suitable, appropriately compacted granular material exists beneath the slab. In areas where Made Ground exceed 600mm, a suspended floor slab is required.

6.7 Construction

The boreholes indicate that instability of excavations is not anticipated provided they are not exposed to adverse weather conditions for any substantial period of time. Instability of the Made Ground is a possibility and should be considered in the groundworks method statements.

Tracked high specification plant is recommended to maintain the build programme. Breaking equipment may also be required locally to penetrate obstructions identified by the Ground Investigation, this will include the buildings on site and the associated substructures.

Shallow groundwater seepages were encountered at 3.0m begl during the Ground Investigation in the Clay deposits and dewatering is unlikely required.

6.8 Concrete Classification

Made Ground

Water soluble sulphate testing was undertaken on four samples of the Made Ground. The range of soluble sulphate (SO_4) recorded is 8.8mg/l to 80.8mg/l. Associated pH values ranged between 7.31 and 8.09 indicating slightly alkaline conditions.

In a dataset where there are less than five results, the highest sulphate result should be used as the selected characteristic value alongside the lowest pH value. For the Made Ground, the characteristic soluble sulphate value is 80.8mg/l and the selected pH value is 7.31.

Natural Strata

Water soluble sulphate testing was undertaken on four samples of the Natural Ground. The range of soluble sulphate (SO_4) recorded is 9.6mg/l to 34.1mg/l. Associated pH values ranged between 8.05 and 8.66 indicating slightly alkaline conditions.

In a dataset where there are less than five results, the highest sulphate result should be used as the selected characteristic value alongside the lowest pH value. For the natural strata, the characteristic soluble sulphate value is 34.1mg/l and the selected pH value is 8.05.

Cohesive strata was encountered beneath the site and the groundwater regime is considered to be static.

The results of laboratory pH and sulphate content indicate that ACEC Class AC-1s and sulphate class DS-1 conditions prevail in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005. The specific concrete mixes (the Design Concrete Class) to be used on site will be determined by the site specific concrete requirements in terms of the durability and structural performance. These are assessed in terms of the Structural Performance Level (SPL) and any need for Additional Protective Measures (APM) detailed in Part D of BRE Special Digest 1 with further guidance in Pt E and F.

6.9 Highway Design

CBR values of 2% to 3% are likely to be achieved in undisturbed natural cohesive soils for pavement design purposes, unless proven otherwise by in-situ testing at sub-base level by a specialist geotechnical engineer. As a minimum the subgrade should be proof rolled prior to construction.

Untreated Made Ground should be assumed to have a CBR value of <2.5%, unless proven otherwise. Highways Agency document HD25 'Interim Advice Note 73/06 Revision 1' (2009) states that where a



subgrade has a CBR value lower than 2.5%, it is considered unsuitable support for a pavement foundation since it would tend to deform under construction traffic and must be improved.

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

6.10 Sustainable Urban Drainage System (SuDS)

Soil percolation testing was outside of the scope of works for this project, it is unlikely that SuDS drainage will be feasible due to the presence of shallow cohesive deposits.

7.0 LAND QUALITY

7.1 Geo-Environmental Testing Results - Soils

Samples of Made Ground have been tested for a range of relevant Contaminants of Concern. In accordance with LCRM, a Generic Quantitative Risk Assessment (GQRA) has been undertaken to determine the significance of the concentrations as derived through Geo-Environmental testing.

The GQRA process comprises the comparison of the actual concentrations measured on site with Generic Assessment Criteria (GACs) for the protection of human health.

The GACs used for the assessment of soil concentrations have been derived using the CLEA model. The GACs used are listed below:

- *Soil Guideline Values (SGVs) which demonstrate minimal risk*
- *LQM/CIEH S4ULs which use the same toxicological data as the SGVs but different exposure criteria*
- *C4SLs which demonstrate low risk*

In deriving the GACs for use on Brownfield sites we have assumed a 1% Soil Organic Matter, unless the results indicate otherwise.

The proposed end-use for the site is a residential/commercial development 16 residential units and four ground floor retail units with a residential communal garden. We have therefore undertaken the GQRA on the basis that the proposed development site falls under the Residential (without Plant Uptake) land-use scenario as defined in SR3 (EA, 2009b).

The strata or sources of contamination targeted by the laboratory testing scheduled is summarised in the table below:

Strata	Number of Samples Tested	Locations
<i>Granular Made Ground (Population 1)</i>	3	CP01, WS03, WS04
<i>Cohesive Made Ground (Population 2)</i>	1	WS01
<i>Existing Garage</i>	1	WS04
<i>Existing Oil Barrels</i>	1	WS03
<i>Former Coal Yard</i>	4	WS01 to WS04, CP01

A summary of the Geo-Environmental Testing results is presented below and the GQRA screening values are presented in *Appendix 7*:

Metals				
Contaminant	Range (mg/kg)	Screening value (mg/kg)	Exceedances	Locations
<i>Arsenic</i>	4.6 - 42.1	40	1	WS03 0.3m
<i>Cadmium</i>	<0.1 - 1.1	85	-	-
<i>Chromium</i>	33.0 - 121.4	910	-	-
<i>Hexavalent Chromium</i>	<0.3	6	-	-
<i>Copper</i>	14 - 954	7100	-	-
<i>Lead</i>	16 - 3992	310	3	CP01 0.50m WS03 0.3m

				WS04 0.2m
Mercury	0.1 - 1.4	1.2	1	WS04 0.2m
Nickel	17.1 - 58.8	180	-	-
Selenium	<1 - 4	430	-	-
Zinc	40 - 518	40000	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)				
Contaminant	Range (mg/kg)	Screening value (mg/kg)	Exceedances	Locations
Naphthalene	<0.04 - 48.27	15	3	CP01 0.5m WS03 0.3m WS04 0.2m
Acenaphthylene	<0.03 - 32.07	2900	-	-
Acenaphthene	<0.05 - 121.57	3000	-	-
Fluorene	<0.04 - 101.04	2800	-	-
Phenanthrene	<0.03 - 546.79	1300	-	-
Anthracene	<0.04 - 179.99	31000	-	-
Fluoranthene	<0.03 - 588.28	1500	-	-
Pyrene	<0.03 - 529.01	3700	-	-
Benzo(a)anthracene	<0.06 - 233.35	11	-	-
Chrysene	<0.02 - 246.99	30	3	CP01 0.5m WS03 0.3m WS04 0.2m
Benzo(b)fluoranthene	<0.05 - 255.76	3.9	3	CP01 0.5m WS03 0.3m WS04 0.2m
Benzo(k)fluoranthene	<0.02 - 99.46	110	-	-
Benzo(a)pyrene	<0.04 - 266.73	3.2	3	CP01 0.5m WS03 0.3m WS04 0.2m
Indeno(123cd)pyrene	<0.04 - 161.43	45	3	CP01 0.5m WS03 0.3m WS04 0.2m
Dibenzo(ah)anthracene	<0.04 - 36.06	0.31	3	CP01 0.50m WS03 0.3m WS04 0.2m
Benzo(ghi)perylene	<0.04 - 141.32	360	-	-
TPH CWG - Aliphatics				
Contaminant	Range (mg/kg)	Screening value (mg/kg)	Exceedances	Locations
>C5-C6	<0.1	42	-	-
>C6-C8	<0.1	100	-	-
>C8-C10	<0.1 - 0.3	27	-	-
>C10-C12	<0.2 - 43.2	130	-	-
>C12-C16	<4.0 - 397	1100	-	-
>C16-C35	<7.0 - 653	65000	-	-
Total aliphatics C5-35	<19.0 - 2615	-	-	-
TPH CWG - Aromatics				
Contaminant	Range (mg/)	Screening value (mg/kg)	Exceedances	Locations
>C5-EC7	<0.1	370	-	-

>EC7-EC8	<0.1	860	-	-
>EC8-EC10	<0.1	47	-	-
>EC10-EC12	<0.2 - 126.8	250	-	-
>EC12-EC16	<4.0 - 1839	1800	1	CP01 0.5m
>EC16-EC21	<7.0 - 8299	1900	3	CP01 0.5m WS03 0.3m WS04 0.2m
>EC21-EC35	<7.0 - 14491	1900	3	CP01 0.5m WS03 0.3m WS04 0.2m
Total aromatics C5-35	<19.00 - 24756	-	-	-
Total aliphatics and aromatics(C5-35)	<38.00 - 27194	-	-	-
MTBE	<5.00 ug/kg	-	-	-
Benzene	<5.00 - 27 ug/kg	380	-	-
Toluene	<5.00 - 38 ug/kg	880000	-	-
Ethylbenzene	<5.00 - 17 ug/kg	83000	-	-
m/p-Xylene	<5.00 - 69 ug/kg	161000	-	-
o-Xylene	<5.00 - 68 ug/kg	88000	-	-
Others				
Organic Matter	1.5 - 25.2%			
Asbestos Screen				
Position	Depth (m bgl)	Result	Quantification	
CP01	0.50	None Detected	n/a	
WS01	0.80	None Detected	n/a	
WS03	0.30	None Detected	n/a	
WS04	0.20	Chrysotile fibre bundles and Asbestos Cement	2.333mass%	

7.2 Generic Quantitative Risk Assessment - Soils

Made Ground has been encountered beneath the site to a maximum depth of 1.5m bgl and generally consisted of ashy very gravelly sand with minor constituents of brick, coal, glass, ceramics, sandstone and siltstone. Exclusively to WS01, soft reworked slightly sandy gravelly Clay with minor constituents of brick, sandstone, coal and ceramics.

No olfactory evidence of contamination was noted during the Ground Investigation, ash and clinker was observed as a minor constituent in the Made Ground.

Heavy Metals

When compared to the residential without plant uptake screening values, elevated concentrations of arsenic, lead and mercury were recorded by the laboratory testing results. All elevated samples were recorded in the ashy granular Made Ground strata.

Arsenic was recorded at a slightly elevated concentration of 42.1mg/kg in WS03 at 0.3m bgl when compared to the residential without plant uptake screening value of 40mg/kg.

Lead was encountered at elevated concentrations of 3992mg/kg in CP01 at 0.5m, 1345mg/kg in WS04 at 0.2m and 337mg/kg in WS03 at 0.3m begl when compared to the residential without plant uptake screening value of 310mg/kg.

Finally, Mercury was encountered at an elevated concentration of 1.4mg/kg when compared to the residential screening value without plant uptake of 1.2mg/kg.

The elevated concentrations of heavy metals including Arsenic, Lead and Mercury recorded within the granular Made Ground on the site is likely associated with ash and clinker encountered in this strata associated with the sites former use as a coal yard.

The elevated concentrations are presented on Contamination Plan GRO-24090-P07.

Speciated Polycyclic Aromatic Hydrocarbons (PAHs)

Elevated concentrations of speciated PAHs have been recorded in CP01, WS03 and WS04. The speciated PAHs recorded include Naphthalene, Chrysene, Benzo(b)fluoranthene, Benzo(a)pyrene, Indeno(123cd)pyrene and Dibenzo(ah)anthracene which are considered to be significantly elevated when compared to the residential without plant uptake screening values.

Naphthalene was encountered at elevated concentrations of 48.27mg/kg in CP01, 31.62mg/kg in WS04 and 33.46mg/kg in WS03 when compared to the residential without plant uptake screening value of 15mg/kg. The elevated concentrations of Naphthalene also exceed the vapour saturation limit of 15mg/kg and a vapour risk is considered to exist at the site.

Chrysene was encountered at elevated concentrations of 246.99mg/kg in CP01, 185.35mg/kg in WS04 and 104.55mg/kg when compared to the residential without plant uptake screening value of 30mg/kg.

Benzo(b)fluoranthene was encountered at elevated concentrations of 255.76mg/kg in CP01, 206.09mg/kg in WS04 and 106.21mg/kg in WS03 when compared to the residential without plant uptake screening value of 3.9mg/kg.

Benzo(a)pyrene was encountered at elevated concentrations of 266.73mg/kg in CP01, 207.56mg/kg in WS04 and 115.75mg/kg in WS03 when compared to the residential without plant uptake screening value of 3.2mg/kg.

Indeno(123cd)pyrene was encountered at elevated concentrations of 161.43mg/kg in CP01, 120.66mg/kg in WS04 and 58.66mg/kg in WS03 when compared to the residential without plant uptake screening value of 45mg/kg.

Finally, Dibenzo(ah)anthracene was encountered at elevated concentrations of 36.06mg/kg in CP01, 25.66mg/kg in WS04 and 15.65mg/kg in WS03 when compared to the residential without plant uptake screening value of 0.31mg/kg.

The elevated concentrations were recorded within CP01, WS03 and WS04 located in the central and southern areas of the site. The elevations were detected in the granular Made Ground where ash and clinker was present associated with the sites former use as a coal yard which is considered to be the likely source of these elevated concentrations.

The elevated concentrations are presented on Contamination Plan GRO-24090-P04.

Speciated Total Petroleum Hydrocarbons (TPH CWG)

No elevated concentrations of aliphatic speciated hydrocarbons have been recorded by the laboratory testing undertaken when compared to residential screening values without plant uptake. Generally, the concentrations of aliphatic hydrocarbons encountered were low.

Slightly elevated concentrations of aromatic EC12-EC16, EC16-EC21 and EC21-EC35 have been recorded in CP01, WS03 and WS04.

An elevated concentration of EC12-EC16 aromatic fraction of 1,839mg/kg was encountered in CP01 when compared to the residential without plant uptake screening value of 1,800mg/kg.

The aromatic EC16-EC21 fraction was recorded at elevated concentrations of 8,299mg/kg in CP01, 4,041mg/kg in WS04 and 2,405mg/kg in WS03 when compared to the residential without plant uptake screening value of 1,900mg/kg.

Finally, EC21-EC35 fractions were recorded at elevated concentrations of 14,491mg/kg in CP01, 8,572mg/kg in WS04 and 4,974mg/kg in WS03 when compared to the residential without plant uptake screening value of 1,900mg/kg.

The elevated concentrations were typically in the heavy end aromatic fractions, these elevations are likely associated with diesel fuels and lubricating oils as indicated by the laboratory interpretation. No visual or olfactory evidence of contamination was encountered during the Ground Investigation.

Asbestos

Three samples of granular Made Ground and one sample of cohesive Made Ground were screened for asbestos, chrysotile fibre bundles and asbestos cement were detected in WS04 at 0.2m begl. This sample was quantified and a mass% of 2.333 was determined.

Trends

Exploratory locations which recorded elevated Contaminants of Concern (CP01, WS03 and WS04) were spread across the site and showed no clear spatial trends. A sample of cohesive Made Ground recorded in WS01 was also tested for contamination, but when compared to the residential screening values, showed no elevations indicating that the granular Made Ground deposits are the only source of contamination at the site.

7.3 Permanent Ground Gases

Four monitoring visits have been conducted at the site between the 9th April and 20th May 2025.

Methane (CH₄) was not detected in any of the boreholes. Carbon dioxide (CO₂) was detected in the standpipes to a maximum reading of 3.2%v/v in WS03 during the first visit, the steady state concentrations were similar to peak. The minimum oxygen (O₂) recording was 15.2%v/v within WS03 during the first visit.

No positive gas flow rates have been encountered during the monitoring period.

The atmospheric pressure ranged between 1002mb and 1024mb and the monitoring was carried out during a falling, steady and rising barometric pressure.

Groundwater was encountered during all monitoring site visits in WS01 and WS04, groundwater was not observed in WS03. Groundwater was encountered between the depths of 2.4m and 2.91m begl in the response zone of the standpipes.

Characterisation of the Gas Screening Value (GSV)

Based on the results recorded, in accordance with BS 8485:2019 and CIRIA Report C665 - the risk to the site from ground gases has been assessed by converting the results to gas screening values (GSVs), calculated by multiplying the typical maximum gas concentrations with the recorded maximum positive flow rates. In addition, individual “hazardous gas flow rates” (Qhg) have been derived for each monitoring event.

$$GSV \text{ (l/hr)} = \text{max borehole flow rate (l/hr)} \times \text{max gas concentration (\%)}$$

For this final assessment, the maximum recorded concentration of carbon dioxide of 3.2%v/v has been used. No positive gas flow rates have been detected therefore, the limit of detection of the gas analyser of 0.1l/hr has been adopted to calculate the GSV. As no methane was detected a GSV has not been calculated.

$$\text{Carbon Dioxide GSV} = 0.032 \text{ (3.2\%)} \times 0.1 = 0.0032 \text{ l/hr}$$

In order to assess the ground gas regime beneath the site and the need to incorporate ground gas precautions, guidance was taken from BS 8485:2019. Based on the site being developed with a mix use commercial/residential building, the Wilson and Card method has been used to carry out the assessment.

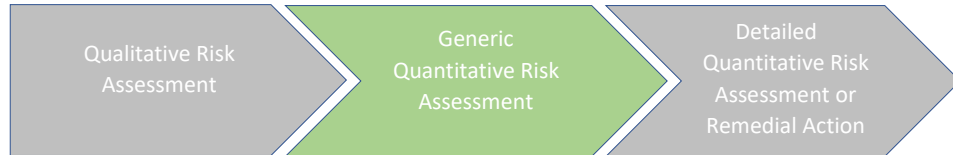
When considering the results, in accordance with BS 8485 (Modified Wilson and Card Classification) it can be seen that the GSV values for carbon dioxide correspond with CS1 criteria (GSV of less than 0.07 l/hr) and based on the GSV the site falls into Characterisation Situation 1 (CS1). The typical maximum concentrations of Methane and Carbon Dioxide encountered are also below the thresholds for Characteristic Situation 2 (CS2) and so the classification does not require increasing.

The site is not located in an area where radon protection measures are required.

7.4 Revised Pollution Linkage Assessment

The CSM has been revised based on the Ground Investigation and testing using Source-Pathway-Receptor assessment criteria that is applicable in the UK, a risk assessment has been completed to determine if a plausible pollution linkage exists between the identified contaminants and receptors. The risk classification has been estimated in accordance with the CIRIA C552 assessment criteria outlined in *Appendix 8*.

Human Health Pollution Linkage Assessment



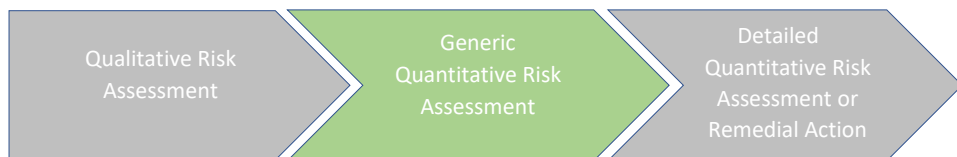
- The table below represents the first stage in the land quality risk assessment process - **the Qualitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					Qualitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
PL1	Contaminated Soils	Ingestion of soil and dust. Dermal contact with soil.	Likely	Medium	Moderate	<p>Pollution Linkage 1 refers to proposed site users coming into contact with contaminated soils on the site.</p> <p>The site is currently utilised as warehouses with a vehicle garage area in the south. Historically, the site has predominantly been developed including a coal yard.</p> <p>Made Ground has been encountered to a maximum depth of 1.5m bgl during the Ground Investigation and elevated concentrations of heavy metals, speciated hydrocarbons and PAHs have been recorded by the laboratory testing when compared to the residential without plant uptake screening values. Additionally, one samples has recorded a positive result for asbestos.</p> <p>The proposed development comprises a three storey residential/commercial building with areas of soft landscaping and a pollution linkage exists.</p>

Conceptual Site Model					Qualitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
PL2	Contaminated Soils	Inhalation of vapour.	Low likelihood	Medium	Moderate	<p>Pollution linkage 2 refers to vapours migrating into confined spaces within the proposed development.</p> <p>Significant elevated concentrations of PAHs have been recorded at the site by the laboratory testing when compared to the residential without plant uptake screening values, these values also exceed the vapour saturation limits for residential end use without plant uptake and a vapour resistant membrane is required at present, if the contaminated Made Ground deposits are removed from site the source of vapours is removed and a vapour resistant membrane is not required.</p>
PL3	Contaminated Soils	Inhalation of soil dust by adjacent site users.	Unlikely	Medium	Low	<p>Pollution Linkage 3 relates to contamination on the subject site affecting adjacent site users.</p> <p>The contaminative sources identified on site are indicative of the surrounding area and shallow impermeable Clay will prevent lateral migration, therefore no realistic pollution linkage is considered to exist.</p>
PL4	Contaminated Soils	Attacking potable water supply pipe.	to Likely	Medium	Moderate	<p>Pollution Linkage 4 refers to the possible contaminants permeating potable water pipes and consumption by the future site end users of the tainted water supply. Made Ground is present at installation depth in some areas of the site and organic contamination has been encountered. A UU Risk Assessment for potable water supply pipes should be undertaken to determine the required potable pipes for the site.</p>

Conceptual Site Model					Qualitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
PL5	Ground Gas	Migration and accumulation of ground gas in internal spaces.	Unlikely	Medium	Low	<p>Through the ground gas monitoring undertaken for the site, the site has been classified as CS1 and ground gas precautions are not required.</p> <p>The site is not within an area requiring radon precautions within foundations.</p> <p>A pollution linkage is not considered to exist.</p>

Controlled Waters Pollution Linkage Assessment



- The table below represents the first stage in the land quality risk assessment process – **Qualitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					Qualitative Risk Assessment	
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	Rationale
PL6	Contaminated Soils	<p>Impaction of groundwater from soil contamination (diffuse and point).</p> <p>Impaction of groundwater from groundwater plume.</p>	Unlikely	Medium	Low	<p>Made Ground has been encountered to a maximum depth of 1.5m begl during the Ground Investigation. Heavy metals, speciated PAHs and speciated hydrocarbons have been recorded by the laboratory testing.</p> <p>Natural cohesive deposits have been encountered at the site to a maximum depth of 10.9m begl during the Ground Investigation indicated to be Glacial Till. The Chester Sandstone Formation has been encountered from 10.9m begl which is a Principal Aquifer.</p> <p>A suitably thick aquitard comprising cohesive soils circa 10m thick is present which will prevent downward migration of contamination.</p> <p>The site is not within 500m of a SPZ and no active groundwater abstractions are within 2000m of the site.</p>

Conceptual Site Model					Qualitative Risk Assessment	
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	Rationale
						<p>The proposed development will be mostly covered with hardsurfacing and a new drainage system installed. This will considerably reduce infiltration and leaching of potential contaminants.</p> <p>#Considering the above, a pollution linkage is not considered to exist between Made Ground and the Principal Aquifer in the bedrock.</p>
PL7	Contaminated Soils	Migration of soil and groundwater contamination impacting surface waters.	Unlikely	Medium	Low	<p>Pollution Linkage 7 refers to the impaction of the nearest watercourse circa 814m east of the site from contaminated soils and groundwater.</p> <p>There are no significant sources of mobile contamination identified by the Ground Investigation and impermeable Clay has been encountered which will restrict lateral migration. Finally the identified watercourses are at sufficient distance to allow considerable attenuation.</p> <p>No plausible pollution linkage has been identified.</p>

7.5 Outline Remedial Strategy

Soils

Granular and cohesive Made Ground was encountered beneath the site. The deepest Made Ground was 1.5m begl in WS01, but was typically encountered to a depth of between 0.5m and 0.8m begl. Elevated concentrations of arsenic, lead, mercury, speciated hydrocarbons and speciated PAHs were recorded generally associated with the presence of ash and clinker in the granular Made Ground associated with the former site uses as a coal yard. In addition, Chrysotile asbestos fibre bundles and asbestos cement have been detected in one sample at 2.333mass%.

The proposed development is residential/commercial end use comprising the construction of a three storey building, incorporating 16 residential apartments and four ground floor retail units with a residential communal garden.

In the area of soft landscaping, a cover system comprising 600mm of suitable clean material inclusive of a minimum of 150mm topsoil underlain by 450mm subsoil should be installed underlain by a demarcation or hard dig layer. The cover system will act as a barrier from the chrysotile asbestos fibre bundles and elevated concentrations of heavy metals and hydrocarbons. The depth of cover system should be validated by a suitably qualified engineer and imported soils should be screened to ensure chemical suitability in accordance with YALPAG 2021.

Any Asbestos Containing Materials (ACMs) should be picked during the enabling and ground works and disposed of to a suitably licensed facility.

Controlled Waters

Mobile contamination has not been identified and no remedial measures are required with respect to controlled waters.

Ground Gas

Gas monitoring results place the site in Characterisation Situation 1 (CS1) and ground gas precautions are not required within the proposed developments based on the monitoring results. The site is not located in an area where radon protection measures are required.

However, a vapour risk is considered to exist at the site and a vapour resistant membrane is required at the site if the contaminated granular Made Ground deposits are left in-situ. If the Granular Made Ground is removed from the site then the source of vapours no longer exists and a vapour resistant membrane is not required.

Watching Brief and Regulatory Compliance

A watching brief should be maintained during the demolition of the existing building and the construction of foundations for any evidence of contamination and to confirm that ground conditions are consistent with the rest of the site. In the event of encountering suspect contamination or unexpected strata, work should cease in that area and Groundtech Consulting should be contacted for advice.

Regulatory compliance should be obtained pre-commencement to avoid delays during the construction phase which will have cost implications.

7.6 Asbestos in Soils

Chrysotile fibre bundles and asbestos cement has been identified in one sample taken from WS04 at 0.2m begl and has been quantified at a mass% of 2.333.

Asbestos Containing Materials (ACMs) should be hand picked during the enabling and ground works and disposed to a suitably licensed facility.

Where soils will be disturbed as part of the ground works, in accordance with the Joint Industry Working Group (JIWG) decision support tool for CAR2012 work categories, the combined hazard and exposure ranking is medium. The work is classified as licenced and CAR does apply, there is a medium risk from asbestos fibres.

The JIWG table is presented in *Appendix 9*. This should be used as an aid to classify risk and recommend the level of protection required, the final decision on how asbestos within the soils should be managed should be made by the contractor.

As there is a Medium risk from asbestos fibres based on the concentration recorded, the JIWG report recommends the following when groundworkers disturb the subbase materials as part of the enabling works:

- *RPE should be worn (EN140 with P3 filter half mask).*
- *Dust suppression should be carried out to reduce the potential for fibre release.*
- *Localised and enhanced personal decontamination facilities should be provided.*

7.7 Health and Safety - Construction and Ground Workers

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

PL Ref	Potential Source	Pollution Linkage	Likelihood	Severity	Level of Risk
PL8	Made Ground	Ingestion, direct contact, inhalation of dusts.	Likely	Medium	Medium
PL9	Asbestos	Ingestion, direct contact, inhalation of dusts.	Likely	Low	Medium

Significantly elevated concentrations of heavy metals, hydrocarbons and PAHs have been recorded by the laboratory testing undertaken. Chrysotile asbestos fibre bundles and asbestos cement has been detected in one sample at the site at a concentration of 2.333% mass. It is recommended that ground workers wear gloves when handling Made Ground and hand washing facilities should be made available as a minimum. The risk to ground workers should be communicated through a site induction and through information on noticeboards.

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

- All ground workers should be issued with the relevant protective clothing, footwear and gloves. These protective items should not be removed from the site and personnel should be instructed as to why and how they are to be used.
- Hand-washing and boot-washing facilities should be provided.
- Care should be taken to minimise the potential for off-site migration of contamination by the provision of dust suppression control and wheel cleaning equipment during the construction works.
- Good practices relating to personal hygiene should be adopted on the site.
- The contractor shall satisfy the Health and Safety Executive with regard to any other matters concerning the health, safety and welfare of persons on the site.

7.8 Waste Classification by Assessment

We have reviewed the testing results and inputted them into the HazWasteOnline model which allows users to code and classify waste as defined in the EWC (European Waste Catalogue 2002) based on EC Regulation 1272/2008 on the Classification, labelling and packaging of substances and mixtures (CLP) and latest Environment Agency guidance (WM3 “Guidance on the classification and assessment of waste (1st edition 2015)-Technical Guidance”).

This is a useful tool as waste producers have the legal responsibility to classify any waste they produce.

Four samples were tested to assess whether they contained any contaminants in the hazardous range when screened against assessment criteria within WM3. The results are in the Waste Classification Report presented in *Appendix 10*.

Reference	Depth (m)	Strata Type	Hazardous Properties
CP01	0.50	Granular Made Ground	HP3, HP7, HP10, HP11, HP14
WS04	0.20	Granular Made Ground	HP3, HP7, HP11
WS03	0.30	Granular Made Ground	HP3, HP7, HP11

The Made Ground in CP01 have been classified as *Hazardous* for waste disposal purposes based on Flammable, Carcinogenic, Toxic for reproduction, Mutagenic and Ecotoxic properties. The Made Ground in WS03 and WS04 have been classified as *Hazardous* for waste disposal purposes based on Flammable, Carcinogenic and Mutagenic properties.

These properties are associated with the hydrocarbon contamination recorded in the Made Ground.

Total testing was not undertaken on the natural soils and are assumed to be *Non-hazardous*.

Chrysotile asbestos fibre bundles and asbestos cement has been encountered at 2.333% mass and is considered to be *Hazardous*. ACMs should be hand picked during the enabling and ground works and further testing undertaken is required prior to disposal.

7.9 Waste Acceptance Criteria (WAC) Results

Waste Acceptance Criteria (WAC) testing was outside the scope of this investigation and the guidance given below is general.

The possibility of automatic inert classification of the natural soils should be explored in accordance with Section 4.3 of the EA guidance document. The Council Decision includes a list of wastes in Section 2.1.1 of

the document that are assumed to be inert and therefore acceptable at a landfill for inert waste without testing, this is the case if:

- *They are single stream waste of a single waste type (although different waste types from the list may be accepted together if they are from a single source)*
and
- *There is no suspicion of material or substances such as metals, asbestos, plastics, chemicals, etc to an extent which increases the risk associated with the waste sufficiently to justify contamination and they do not contain other their disposal in other classes of landfill.*

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

Materials should be segregated and where necessary sufficient time is allowed to further classify the material properly, including discussion with landfill sites and waste transfer stations to find the best disposal route. It is recommended that where possible that the soils could be recycled at a suitable local waste treatment plant or transfer station rather than a landfill disposal route.

The reuse of soils on the site should be done in accordance with the CL:AIRE “Development Industry Code of Practice for the Definition of Waste” (CL:AIRE CoP). Any re-use scheme should be designed to minimise disposal costs.

After a cut and fill balance plan/volume calculation has been carried out, a U1 and T5 exemption could be registered. This will allow the use of the following soils without a waste permit or under Dow CoP MMP:

- *1,000 tonnes (c. 600m³) of non-hazardous soil*
- *5,000 tonnes (c. 3,000m³) of natural sand and gravels.*
- *50,000 tonnes (c. 25,000m³) of bituminous material to be used in roadways.*
- *5,000 tonnes (c. 3,000m³) of crushed concrete/stone.*

8.0 FINAL APPRAISAL

8.1 Land Quality

Historic maps dating back to 1848 indicate the site was initially undeveloped, used as garden space for nearby residents. In 1907 first commercial property was established on site. By 1956, a coal yard was present on site, which became non-operational by 1994. There were no changes until 2024 whereby two warehouse units occupy the site.

It is proposed to construct a three storey building, incorporating 16 residential apartment and four ground-level commercial units. Associated soft and hard landscaping features include a communal residential garden, access roads and car parking.

A mixture of cohesive and granular Made Ground was encountered to a maximum depth of 1.5m begl however predominantly granular strata was encountered. Natural strata was encountered in all exploratory holes and comprised one cohesive stratum. No olfactory evidence of contamination was noted during the Ground Investigation, ash and clinker was observed within the Made Ground.

Geo-environmental testing conducted on Made Ground samples identified elevated concentrations of heavy metals, speciated hydrocarbons and speciated PAHs. Asbestos was detected in a single sample during laboratory screening. The risk to Human Health is considered to be *Moderate*.

A cover system comprising 600mm of suitable clean material inclusive of a minimum of 150mm topsoil underlain by 450mm subsoil should be installed within the communal soft landscaping area underlain by a demarcation membrane or hard dig layer.

No mobile contamination has been identified and the risk to controlled waters is considered to be *Low*.

The risk from vapours is considered to be *High*, as Naphthalene has been encountered above the vapour saturation limit and a vapour resistant membrane is required. If the contaminated Made Ground deposits are removed from the site the source of vapours will no longer be present and a vapour resistant membrane will not be required.

Waste classification testing has confirmed that the Made Ground is *Hazardous* for waste disposal purposes.

A watching brief should be maintained during the demolition of the existing building and the construction of foundations for any evidence of contamination.

8.2 Ground Engineering

The most suitable foundation solution for the proposed residential development will be strip/trench or pad foundations constructed in the firm to stiff medium to high strength Clay. The safe ABP for this foundation design is 130kN/m².

Depending on proposed loadings, driven piles may be required at the site. For a Driven Pile end bearing in the sandstone bedrock a vertical allowable load of 500kN has been achieved. Additionally for a single pile end bearing in the high strength clay deposits a vertical allowable load of 250kN has been achieved.



A watching brief should be maintained during the demolition of the existing building and the construction of foundations to confirm that ground conditions below the structure are consistent with the remainder of the site.

8.3 Required Further Work

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

Watching brief/investigation beneath existing buildings on site post demolition
Demolition Asbestos survey
Detailed Foundation design
Confirmation of recommendations made in this appraisal with regulators

9.0 RELEVANT INDUSTRY REFERENCES

- British Standards Institution. *Investigation of Potentially Contaminated sites - code of practice*. BS 10175:2017.
- British Standards Institution '*Code of Practice for Site Investigations*' BS 5930:2020.
- British Standards Institution "*Geotechnical investigation and testing – Identification and classification of soil*" BS EN ISO 14688:2002.
- British Standards Institution "*Geotechnical investigation and testing – Identification and classification of rock*" BS EN ISO 14689:2002.
- BRE Report BR211 '*Radon – Guidance on protective measures for new buildings*' 2015 Edition.
- BRE Special Digest 1: "*Concrete in Aggressive Ground*" 3rd Ed 2005.
- CIRIA 552 "*Contaminated Land Risk Assessment – A guide to good practice*" 2001.
- CIRIA C665 "*Assessing Risks Posed by Hazardous Ground Gases to Buildings*" 2007.
- Wilson & Card "*Proposed method classifying gassing sites*" Ground Engineering 1999.
- Card & Steve Wilson in "*A pragmatic approach to ground gas risk assessment for the 21st Century*" - CIRIA/Environmental Protection UK Ground gas seminar 2011
- BS 8576:2013 '*Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs)*'
- BS 8485:2015 '*Code of practise for the design of protective measures for methane and carbon dioxide ground gases for new buildings*'
- The Hazardous Waste (England) Regulations 2005.
- Environment Agency Hazardous Waste: "*Guidance on the classification and assessment of waste*" WM3 ver. 1 May 2015.
- The National Planning Policy Framework (NPPF) March 2012
- DETR. Circular 02/2000 Contaminated Land.
- Environment Agency, 2009 '*Using Soil Guideline Values*'.
- Environment Agency, 2009 '*Updated Technical Background to the CLEA model*'.
- Environment Agency, 2009 '*Human health toxicological assessment of contaminants in soil*'.
- Department of the Environment, 1994, CLR Report No 1 '*A framework for assessing the impact of contaminated land on groundwater and surface water*'.
- Department of the Environment, 1994, CLR Report No 2 '*Guidance on Preliminary Site Inspection of Contaminated Land*'.
- Department of the Environment, 1994, CLR Report No 3 '*Documentary research on Industrial Sites*'.
- Department of the Environment, 1994, CLR Report No 4 '*Sampling Strategies for Contaminated Land*'.
- DEFRA and the Environment Agency, 2002-2004, CLR10 '*Soil Guideline Value Reports for Individual Soil Contaminants*'.
- LCRM (Land Contamination Risk Management), April 2021.
- Nathanail, C. P., McCaffrey, C., Gillett, A., Ogden, R. C. and Nathanail, J.F. 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham.
- CL:AIRE, 2014 '*Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*'.
- Water Framework Directive.
- Environmental Quality Standards.

UK Drinking Water Standards: Water Supply (Water Quality) Regulations 1989 (SI 1989/1147) and Water Supply (Water Quality) Regulations

UKWIR Report 10/WM/03/21 2010 "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites"

Health & Safety Executive, 1991. 'Protection of Workers & the General Public during the Development of Contaminated Land'.

Environment Agency & NHBC, 2000. R&D Publication 66. Guidance for the Safe Development of Housing on Land Affected by Contamination.

Environment Agency "Guidance on the classification and assessment of waste (1st edition 2015) Technical Guidance WM3"

CL:AIRE "*The Definition of Waste: Development Industry Code of Practice*" Version 2 March 2011.

CIRIA "*Asbestos in soil and made ground: a guide to understanding and managing risks*" C733 2014

Control of Asbestos Regulations (CAR) 2012

Harris, M R, Herbert, S. M, Smith, M A 'Remedial Treatment for Contaminated Land' (twelve volumes), special publications 101-112, CIRIA 1996.

Department of the Environment. 1995. Industry Profiles - 48 separate publications available from The Stationery Office, London

Environment Agency. R&D Publication 20. Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources. 1999.

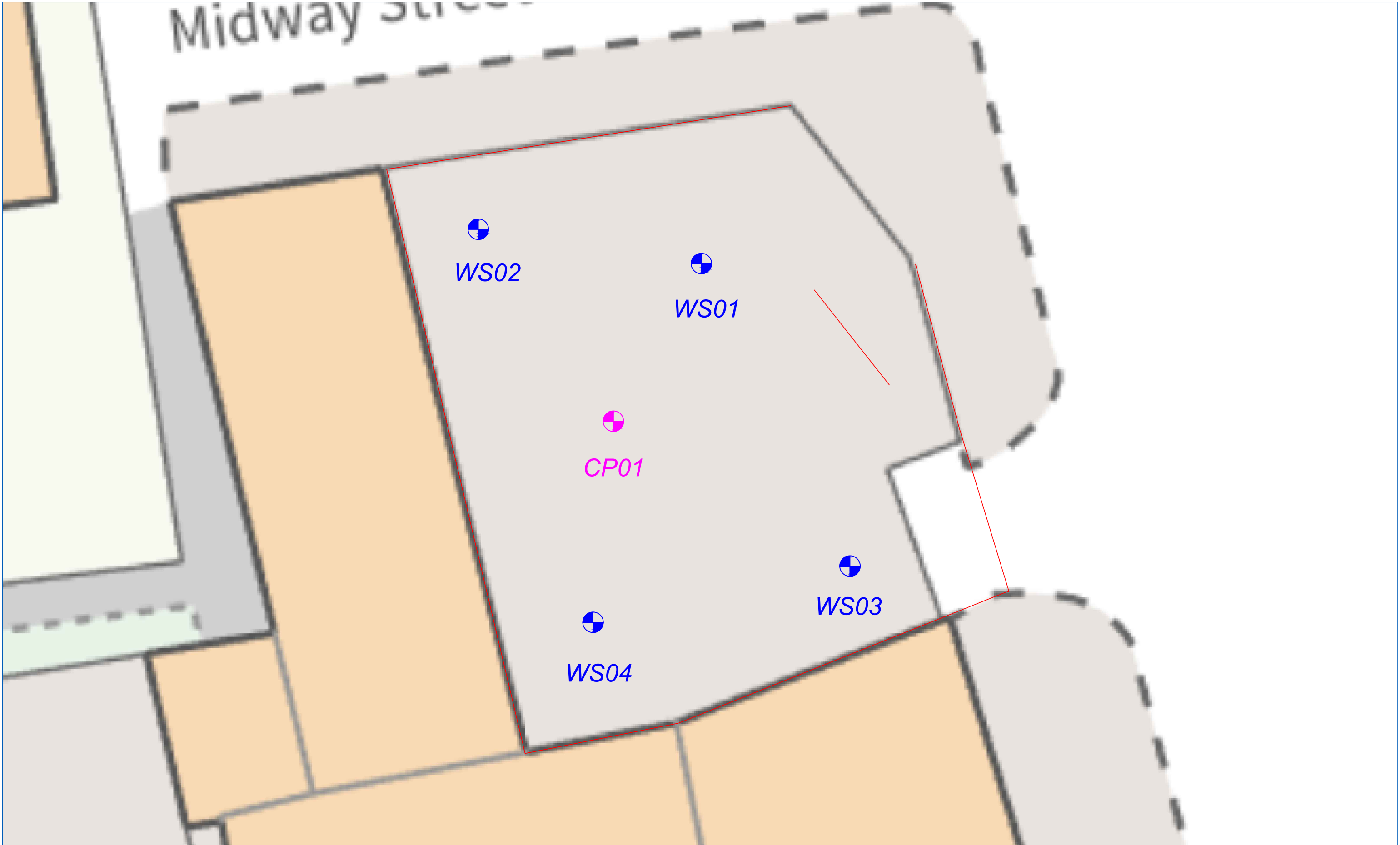
Specification for Highways Works – Series 600 Earthworks November 2016.



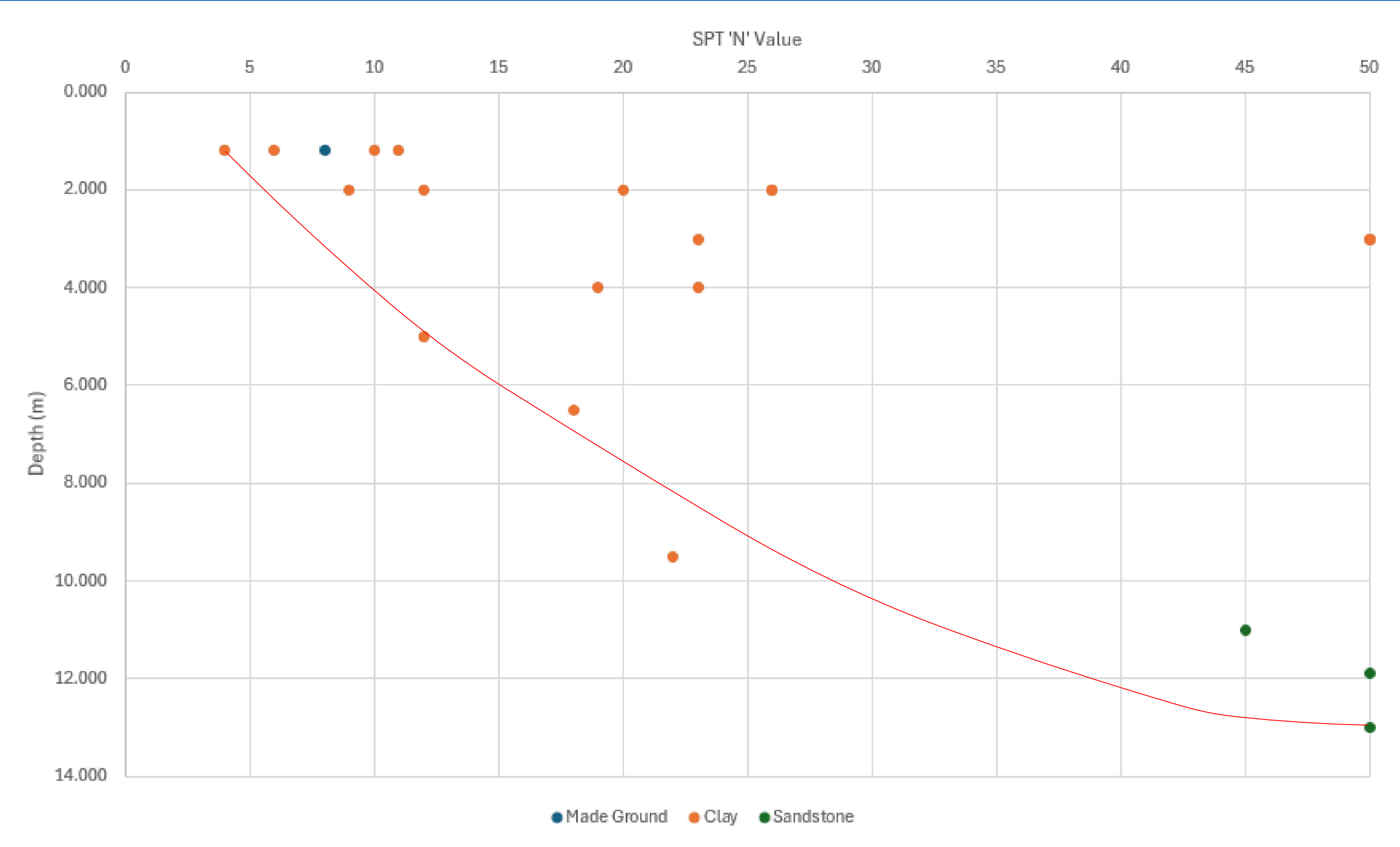
APPENDIX 1 - Plans



<div>GROUNDTECH</div> <div>CONSULTING</div> <div></div>	CLIENT	DATE				Status		<div>Notes</div> <div><div></div> Site Location</div>
	RAJA ASAD	MAY 2024				Preliminary		
	PROJECT TITLE	SCALE				Draft		
	816 STOCKPORT ROAD	NTS				Issued	<div></div>	
	PLAN TITLE	PLAN NUMBER				For Comment		
	PROJECT LOCATION PLAN	GRO-24090-P01	Rev.	Details	Date	Approved		



<div>GROUNDTECH</div> <div>CONSULTING</div> <div></div>	CLIENT	DATE				Status		<div>Notes</div> <div> Cable Percussive Borehole Location</div> <div> Windowless Sample Borehole Location</div>
	RAJA ASAD	JUNE 2025				Preliminary		
	PROJECT TITLE	SCALE				Draft		
	816 STOCKPORT ROAD	NTS				Issued		
	PLAN TITLE	PLAN NUMBER				For Comment		
	EXPLORATORY HOLE LOCATION PLAN	GRO-24090-P04	Rev.	Details	Date	Approved		

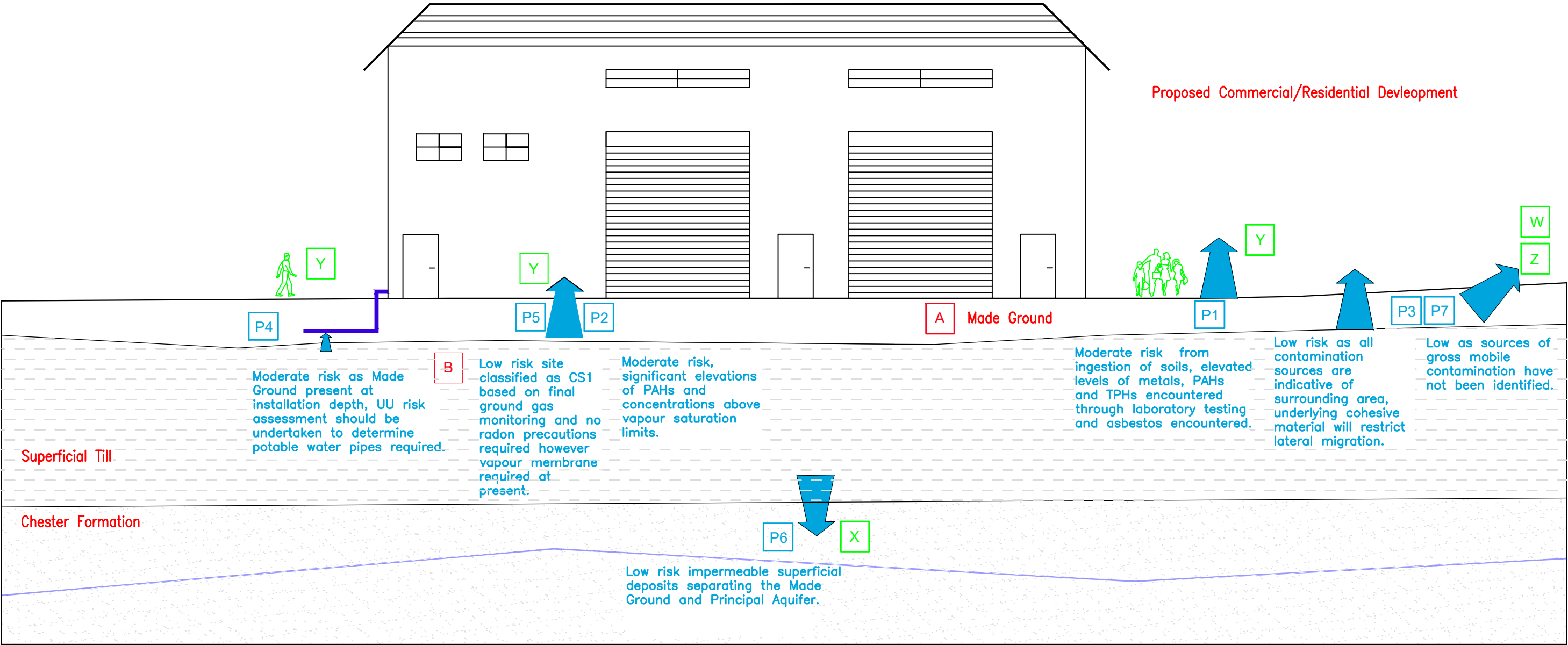


<div>GROUNDTECH</div> <div>CONSULTING</div> <div></div>	CLIENT	DATE				Status		Notes
	RAJA ASAD	JUNE 2025				Preliminary		
	PROJECT TITLE	SCALE				Draft		
	816 STOCKPORT ROAD	NTS				Issued	<div></div>	
	PLAN TITLE	PLAN NUMBER				For Comment		
	GENERALISED GROUND MODEL	GRO-24090-P05				Approved		

SOURCES
<p>A. Contaminated soils / Made Ground.</p> <p>B. Ground gas.</p>

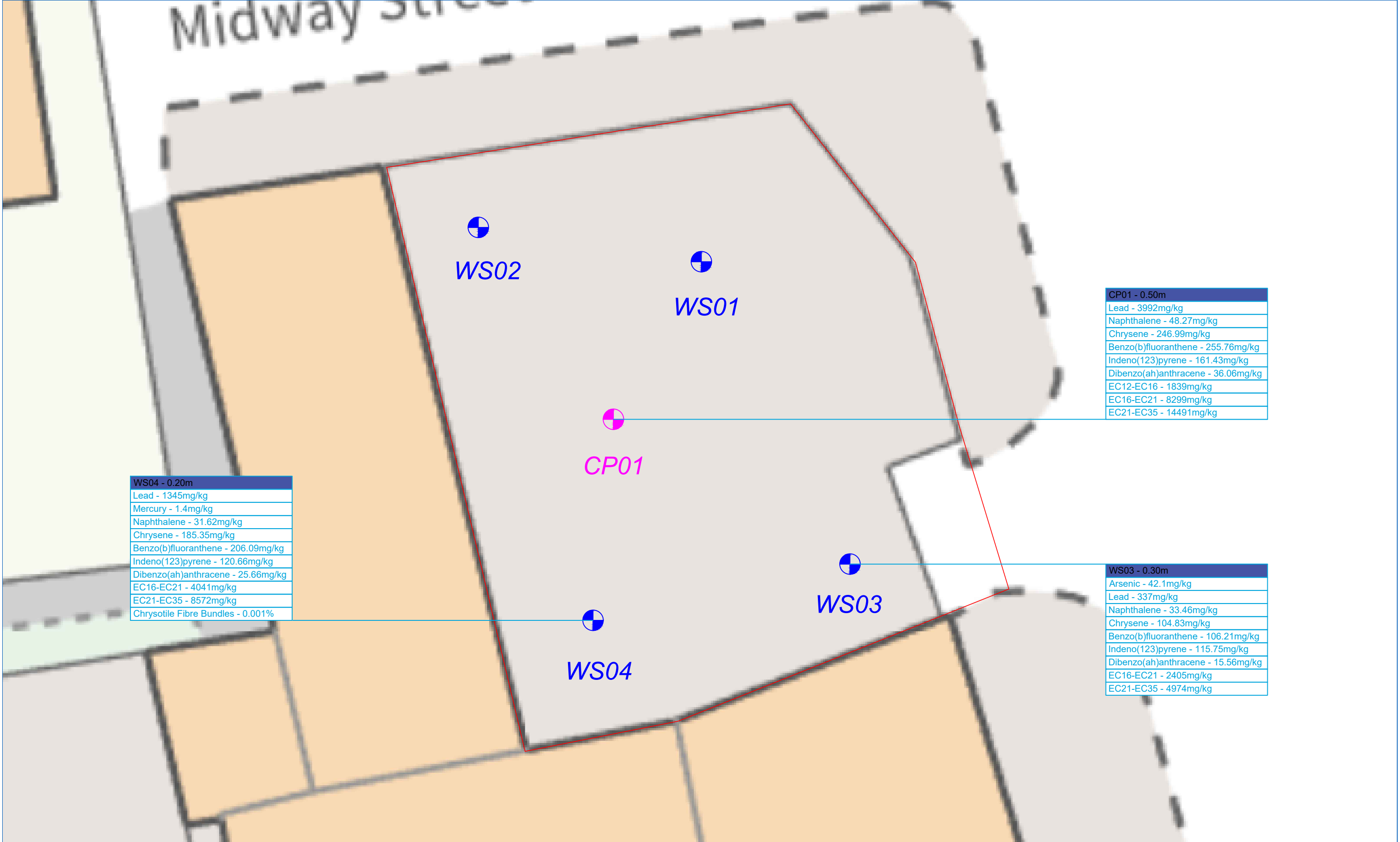
POLLUTION LINKAGES
<p>P1. Ingestion of soil and dust.</p> <p>P2. Inhalation of vapour.</p> <p>P3. Inhalation of soil dust by adjacent site users.</p> <p>P4. Attacking of potable water supply pipe.</p> <p>P5. Migration and accumulation of ground gas in internal places.</p> <p>P6. Impaction of groundwater from soil contamination.</p> <p>P7. Migration of soil and groundwater contamination impacting surface waters.</p>

RECEPTORS
<p>W. Platt Brook c. 814m north west of the site</p> <p>X. Groundwater within the Superficial Secondary Undifferentiated and Bedrock Principal Aquifer</p> <p>Y. Site end users</p> <p>Z. Adjacent site users</p>



<div>GROUNDTECH</div> <div>CONSULTING</div> <div></div>	CLIENT	DATE				Status		Notes
	RAJA ASAD	JUNE 2015				Preliminary		
	PROJECT TITLE	SCALE				Draft		
	816 STOCKPORT ROAD	NTS				Issued	<div></div>	
	PLAN TITLE	PLAN NUMBER				For Comment		
	REVISED ILLUSTRATIVE CSM	GRO-24060-P06	Rev.	Details	Date	Approved		







APPENDIX 2 - Site Photographs



Photograph 1 - Site Entrance



Photograph 2 - Domestic/Commercial Waste



Photograph 3 - Commercial Waste/Disused Cars



Photograph 4 - Oil Drum Storage Area



Photograph 5 - Existing Garage



Photograph 6 - Commercial Waste



APPENDIX 3 - Exploratory Hole Logs



GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

WS01

Sheet 1 of 2

Project Name: 816 STOCKPORT ROAD

Project No.
GRO-24090

Co-ords: -

Hole Type
WS

Location: LEVENSHULME

Level:

Scale
1:25

Client: RAJA ASAD

Dates: 01/04/2025 -

Logged By
LD

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.15			MADE GROUND: Black tarmac.	
		0.20	ES					MADE GROUND: Blackish brown ashy clayey very gravelly fine to coarse SAND with moderate cobble content of brick. Gravel is angular to subangular fine to coarse of brick, sandstone, coal and ceramic.	
		0.50	ES		0.60			MADE GROUND: Soft grey brown slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine to coarse of brick, sandstone, coal and ceramics. Sand is fine to medium.	1
		0.80	ES						
		1.20 1.20 - 1.65	D	N=8 (2,2/2,2,2,2)	1.50			Firm to stiff orange brown gravelly very sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone. Sand is fine to medium.	2
		2.00 2.00 - 2.45 2.00 - 2.50	D U	N=9 (0,0/1,2,2,4)					
					2.60			Firm grey slightly gravelly very sandy CLAY. Gravel is angular to subangular fine to medium of sandstone. Sand is fine to medium.	
		3.00 3.00 - 3.45	D	N=23 (8,6/5,5,5,8)				At 3.0m bgl colour change to reddish brown.	3
		4.00 4.00 - 4.45	D	N=23 (5,5/5,5,6,7)					4
		5.00		N=12 (0,0/0,4,4,4)	5.00			Continued on next sheet	5

Remarks

1. Location cleared of services using a handheld Cable Avoidance Tool (CAT). 2. Tarmac cored to 0.15m bgl. 3. Hand dug inspection pit excavated to 1.20m bgl. 4. Groundwater encountered at 3.0m bgl. 5. Borehole terminated at 5.0m bgl. 6. Monitoring standpipe installed to 5.0m bgl (1.0m plain, 4.0m slotted).





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

WS01

Sheet 2 of 2

Project Name: 816 STOCKPORT ROAD

Project No.
GRO-24090

Co-ords: -

Hole Type
WS

Location: LEVENSHULME

Level:

Scale
1:25

Client: RAJA ASAD

Dates: 01/04/2025 -

Logged By
LD

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.00 - 5.45	D					End of borehole at 5.00 m	
									6
									7
									8
									9
									10

Remarks

1. Location cleared of services using a handheld Cable Avoidance Tool (CAT). 2. Tarmac cored to 0.15m bgl. 3. Hand dug inspection pit excavated to 1.20m bgl. 4. Groundwater encountered at 3.0m bgl. 5. Borehole terminated at 5.0m bgl. 6. Monitoring standpipe installed to 5.0m bgl (1.0m plain, 4.0m slotted).





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

WS02

Sheet 1 of 1

Project Name: 816 STOCKPORT ROAD

Project No.
GRO-24090

Co-ords: -

Hole Type
WS

Location: LEVENSHULME

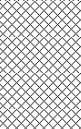
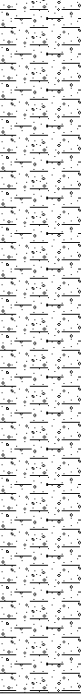
Level:

Scale
1:25

Client: RAJA ASAD

Dates: 01/04/2025 -

Logged By
LD

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.10			MADE GROUND: Black tarmac.	1
		0.20	ES					MADE GROUND: Orange brown clayey very gravelly fine to medium SAND with moderate cobble content of brick. Gravel is angular to subangular fine to coarse of brick, sandstone and ceramic.	
		0.50	ES		0.70				
		1.00	D					High strength firm mottled yellow grey slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, siltstone and coal. Sand is fine to medium.	
		1.00	ES						
		1.20		N=4 (1,1/2,0,1,1)					
		1.50 - 2.00	U						
		2.00							
		2.00 - 2.45	D	N=20 (4,4/4,4,6,6)				At 2.0m bgl colour change to mottled orange brown grey.	
		3.00			3.00			End of borehole at 3.00 m	3
		3.00 - 3.45	D	N=50 (9,10/50 for 255mm)					4
									5

Remarks

1. Location cleared of services using a handheld Cable Avoidance Tool (CAT). 2. Tarmac cored to 0.10m bgl. 3. Hand dug inspection pit excavated to 1.2m bgl. 4. No groundwater encountered. 5. Borehole terminated at 3.0m bgl due to refusal on stiff clay. 6. Borehole backfilled with arisings.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

WS03

Sheet 1 of 1

Project Name: 816 STOCKPORT ROAD

Project No.
GRO-24090

Co-ords: -

Hole Type
WS

Location: LEVENSHULME

Level:

Scale
1:25

Client: RAJA ASAD

Dates: 01/04/2025 -

Logged By
LD

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.15			MADE GROUND: Black tarmac.	
		0.30	ES					MADE GROUND: Blackish grey ashy very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick, sandstone, coal, siltstone and ceramic.	
		0.80	ES		0.50			Firm to stiff mottled orange brown grey gravelly very sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone, siltstone and coal. Sand is fine to medium.	
		1.00	D						1
		1.20		N=11 (1,2/2,3,3,3)					
		1.20 - 1.65	D						
		2.00		N=26 (4,4/5,7,7,7)					2
		2.00 - 2.45	D						
		2.00 - 2.50	U						
		3.00		N=50 (6,9/50 for 285mm)	3.00			End of borehole at 3.00 m	3
		3.00 - 3.45	D						4
									5

Remarks

1. Location cleared of services using a handheld Cable Avoidance Tool (CAT). 2. Tarmac cored to 0.15m bgl. 3. Hand dug inspection pit excavated to 1.20m bgl. 4. No groundwater encountered. 5. Borehole terminated at 3.0m bgl due to refusal on stiff clay. 6. Monitoring standpipe installed to 3.0m bgl (0.5m plain, 2.5m slotted).





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

WS04

Sheet 1 of 1

Project Name: 816 STOCKPORT ROAD

Project No.
GRO-24090

Co-ords: -

Hole Type
WS

Location: LEVENSHULME

Level:

Scale
1:25

Client: RAJA ASAD

Dates: 01/04/2025 -

Logged By
LD

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10			0.10			MADE GROUND: Black tarmac.	
		0.20	ES					MADE GROUND: Black ashy very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick, coal, glass, sandstone and siltstone.	
		0.60	ES		0.50			MADE GROUND: Grey black ashy clayey very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick, coal, glass, sandstone and siltstone.	
		1.00	D		0.80			Soft to firm mottled orange grey slightly gravelly sandy CLAY. Gravel is angular to subangular fine to medium of coal and sandstone. Sand is fine to medium.	1
		1.00	ES						
		1.20		N=10 (2,5/3,3,2,2)					
		1.20 - 1.65	D		1.50			Firm to stiff mottled orange brown grey gravelly very sandy CLAY with occasional cobble content of sandstone. Gravel is angular to subangular fine to coarse of sandstone. Sand is fine to medium.	2
		2.00		N=26 (4,5/5,7,7,7)					
		2.00 - 2.45	D						
		3.00		N=50 (10,13/50 for 275mm)	3.00			End of borehole at 3.00 m	3
		3.00 - 3.45	D						4
									5

Remarks

1. Location cleared of services using a handheld Cable Avoidance Tool (CAT). 2. Tarmac cored to 0.10m bgl. 3. Hand dug inspection pit excavated to 1.20m bgl. 4. No groundwater encountered. 5. Borehole terminated at 3.0m bgl due to refusal on stiff clay. 6. Monitoring standpipe installed to 3.0m bgl (0.5m plain, 2.5m slotted).





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

CP01

Sheet 1 of 2

Project Name: 816 STOCKPORT ROAD

Project No.
GRO-24090

Co-ords: -

Hole Type
CP

Location: LEVENSHULME

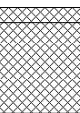
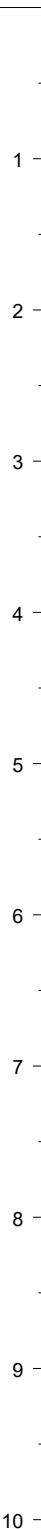
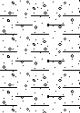
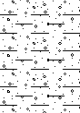
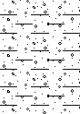
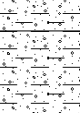
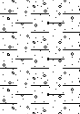
Level:

Scale
1:50

Client: RAJA ASAD

Dates: 01/04/2025 -

Logged By
LD

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description								
		Depth (m)	Type	Results												
		0.20	ES	N=6 (1,1/1,2,1,2)	0.10			MADE GROUND: Black tarmac.								
		0.50	ES		0.70			MADE GROUND: Black ashy very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick, coal, glass, sandstone and siltstone.								
		0.74	D					Soft to firm mottled brown grey slightly gravelly sandy CLAY. Gravel is angular to subangular fine to medium of coal and sandstone. Sand is fine to medium.								
		1.00	D		1.20											
		1.00	ES													
		1.20	D		N=12 (1,2/2,3,3,4)		Firm brown orange sandy gravelly CLAY Gravel is angular to subrounded fine to coarse of sandstone and coal. Sand is fine to medium.									
		1.20 - 1.65	D													
		2.00	D		At 2.50m bgl colour change to mottled brown grey.											
		2.00	D													
		2.00 - 2.45	D													
		3.00	D		Becoming medium strength from 3.00m begl.											
		3.00 - 3.45	U				N=19 (3,4/4,4,5,6)									
		4.00	D													
		4.00	D													
		4.00 - 4.45	D		Becoming high strength from 5.0m begl.											
		5.00	D													
		5.00 - 5.45	U													
		6.00	D	6.10						Firm brown slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine to medium of sandstone. Sand is fine to medium.						
		6.50	D				N=18 (3,3/4,4,5,5)									
		6.50 - 6.95	D													
		7.00	D													
		8.00	D				N=22 (3,4/5,5,6,6)				Becoming firm from 7.50m bgl.					
		8.00 - 8.45	U													
		9.00	D													
		9.50	D													
		9.50 - 9.95	D													
		10.00	D													
Continued on next sheet									10							

Continued on next sheet

Remarks

1. Location cleared of services using a handheld Cable Avoidance Tool (CAT). 2. Tarmac cored to 0.10m bgl. 3. Hand dug inspection pit excavated to 1.2m bgl. 4. Groundwater encountered at 4.50m bgl. 5. SPT refusal at 11.90m bgl. 6. Chiselling undertaken for 1 hour with minimal penetration. 7. SPT refusal at 12.90m bgl. 8. Borehole terminated at 12.9m bgl due to refusal on sandstone. 9. Borehole backfilled with arisings.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

CP01

Sheet 2 of 2

Project Name: 816 STOCKPORT ROAD

Project No.
GRO-24090

Co-ords: -

Hole Type
CP

Location: LEVENSHULME

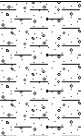
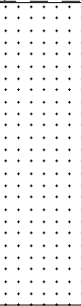
Level:

Scale
1:50

Client: RAJA ASAD

Dates: 01/04/2025 -

Logged By
LD

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 11.00	D	N=45 (7,9/10,10,12,13)	10.90			Reddish brown residually weathered SANDSTONE recovered as dense reddish brown slightly gravelly clayey fine SAND with clay lenses. Gravel is angular to subangular fine of sandstone. (CHESTER FORMATION).	11
		11.00 - 11.45	D						
		11.90		N=50 (9,11/50 for 235mm)					12
		12.00	D						
		12.50 - 12.95	D						
		12.90		N=50 (25 for 30mm/50 for 60mm)	12.90				13
		13.00	D					End of borehole at 12.90 m	14
									15
									16
									17
									18
									19
									20

Remarks

1. Location cleared of services using a handheld Cable Avoidance Tool (CAT). 2. Tarmac cored to 0.10m bgl. 3. Hand dug inspection pit excavated to 1.2m bgl. 4. Groundwater encountered at 4.50m bgl. 5. SPT refusal at 11.90m bgl. 6. Chiselling undertaken for 1 hour with minimal penetration. 7. SPT refusal at 12.90m bgl. 8. Borehole terminated at 12.9m bgl due to refusal on sandstone. 9. Borehole backfilled with arisings.





APPENDIX 4 - Geo-Environmental Testing Results

Groundtech Consulting Limited
PO Box 499
Manchester
United Kingdom
M28 8EE



4225



Attention : Lucy Denman
Date : 26th June, 2025
Your reference : GRO-24090
Our reference : Test Report 25/5517 Batch 1
Location : 816 Stockpile Road
Date samples received : 4th April, 2025
Status : Final Report
Issue : 202506261453

Fourteen samples were received for analysis on 4th April, 2025 of which seven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 15.421 kg of CO2

Scope 1&2&3 emissions - 36.444 kg of CO2

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-24090
Location: 816 Stockpile Road
Contact: Lucy Denman
EMT Job No: 25/5517

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21				Please see attached notes for all abbreviations and acronyms		
Sample ID	CP01	WS01	WS04	WS03	WS03	WS02	WS04						
Depth	0.50	0.80	0.20	0.30	0.80	1.00	1.00						
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	01/04/2025	01/04/2025	01/04/2025	01/04/2025	01/04/2025	01/04/2025	01/04/2025						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025				LOD/LOR	Units	Method No.
Arsenic #	16.9	4.6	37.7	42.1	-	-	-				<0.5	mg/kg	TM30/PM15
Cadmium #	0.3	<0.1	1.1	<0.1	-	-	-				<0.1	mg/kg	TM30/PM15
Chromium #	53.5	33.0	35.1	121.4	-	-	-				<0.5	mg/kg	TM30/PM15
Copper #	95	14	954 ^{AA}	306 ^{AA}	-	-	-				<1	mg/kg	TM30/PM15
Lead #	3992 ^{AA}	16	1345	337	-	-	-				<5	mg/kg	TM30/PM15
Mercury #	0.6	0.1	1.4	0.8	-	-	-				<0.1	mg/kg	TM30/PM15
Nickel #	30.0	17.1	51.3	58.8	-	-	-				<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	2	4	-	-	-				<1	mg/kg	TM30/PM15
Zinc #	254	40	518	137	-	-	-				<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	48.27 ^{AB}	<0.04	31.62 ^{AB}	33.46	-	-	-				<0.04	mg/kg	TM4/PM8
Acenaphthylene	11.78 ^{AB}	<0.03	6.75 ^{AB}	32.07	-	-	-				<0.03	mg/kg	TM4/PM8
Acenaphthene #	121.57 ^{AB}	<0.05	48.97 ^{AB}	19.71	-	-	-				<0.05	mg/kg	TM4/PM8
Fluorene #	101.04 ^{AB}	<0.04	39.98 ^{AB}	36.80	-	-	-				<0.04	mg/kg	TM4/PM8
Phenanthrene #	546.79 ^{AB}	<0.03	295.99 ^{AB}	198.22	-	-	-				<0.03	mg/kg	TM4/PM8
Anthracene #	179.99 ^{AB}	<0.04	97.18 ^{AB}	64.88	-	-	-				<0.04	mg/kg	TM4/PM8
Fluoranthene #	588.28 ^{AB}	<0.03	429.45 ^{AB}	219.39	-	-	-				<0.03	mg/kg	TM4/PM8
Pyrene #	529.01 ^{AB}	<0.03	384.89 ^{AB}	223.50	-	-	-				<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	233.35 ^{AB}	<0.06	178.72 ^{AB}	104.55	-	-	-				<0.06	mg/kg	TM4/PM8
Chrysene #	246.99 ^{AB}	<0.02	185.35 ^{AB}	104.83	-	-	-				<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene #	355.22 ^{AB}	<0.07	286.23 ^{AB}	147.51	-	-	-				<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	266.73 ^{AB}	<0.04	207.56 ^{AB}	115.75	-	-	-				<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	161.43 ^{AB}	<0.04	120.66 ^{AB}	58.66	-	-	-				<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	36.06 ^{AB}	<0.04	25.66 ^{AB}	15.56	-	-	-				<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	141.32 ^{AB}	<0.04	113.68 ^{AB}	58.08	-	-	-				<0.04	mg/kg	TM4/PM8
PAH 16 Total	3567.8 ^{AB}	<0.6	2452.7 ^{AB}	1433.0	-	-	-				<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	255.76 ^{AB}	<0.05	206.09 ^{AB}	106.21	-	-	-				<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	99.46 ^{AB}	<0.02	80.14 ^{AB}	41.30	-	-	-				<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98 ^{AB}	97	97 ^{AB}	96	-	-	-				<0	%	TM4/PM8
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1 ^{SV}	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	-	-	-				<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1 ^{SV}	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	-	-	-				<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	0.3 ^{SV}	<0.1	0.1 ^{SV}	0.3 ^{SV}	-	-	-				<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	22.3	<0.2	43.2	12.0	-	-	-				<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	120	<4	397	45	-	-	-				<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	223	<7	653	62	-	-	-				<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	2072	<7	1522	172	-	-	-				<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH_CU+HS_1D_AL)	2438	<19	2615	291	-	-	-				<19	mg/kg	TM5/PM8/PM16/PM12/PM15

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-24090
Location: 816 Stockpile Road
Contact: Lucy Denman
EMT Job No: 25/5517

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21				Please see attached notes for all abbreviations and acronyms		
Sample ID	CP01	WS01	WS04	WS03	WS03	WS02	WS04						
Depth	0.50	0.80	0.20	0.30	0.80	1.00	1.00						
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	01/04/2025	01/04/2025	01/04/2025	01/04/2025	01/04/2025	01/04/2025	01/04/2025						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025				LOD/LOR	Units	Method No.
TPH CWG													
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1 ^{SV}	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	-	-	-				<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1 ^{SV}	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	-	-	-				<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1 ^{SV}	<0.1	<0.1 ^{SV}	0.1 ^{SV}	-	-	-				<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	126.8	<0.2	40.1	69.9	-	-	-				<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	1839	<4	662	512	-	-	-				<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	8299	<7	4041	2405	-	-	-				<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	14491	<7	8572	4974	-	-	-				<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH_CU+HS_1D_AR) #	24756	<19	13315	7961	-	-	-				<19	mg/kg	TM5/PM8/PM16
Total aliphatics and aromatics (C5-35) (EH_CU+HS_1D_Total)	27194	<38	15930	8252	-	-	-				<38	mg/kg	TM5/PM8/PM16
MTBE #	<5 ^{SV}	<5	<5 ^{SV}	<5 ^{SV}	-	-	-				<5	ug/kg	TM36/PM12
Benzene #	17 ^{SV}	<5	25 ^{SV}	18 ^{SV}	-	-	-				<5	ug/kg	TM36/PM12
Toluene #	20 ^{SV}	<5	21 ^{SV}	38 ^{SV}	-	-	-				<5	ug/kg	TM36/PM12
Ethylbenzene #	12 ^{SV}	<5	10 ^{SV}	17 ^{SV}	-	-	-				<5	ug/kg	TM36/PM12
m/p-Xylene #	29 ^{SV}	<5	21 ^{SV}	69 ^{SV}	-	-	-				<5	ug/kg	TM36/PM12
o-Xylene #	23 ^{SV}	<5	16 ^{SV}	68 ^{SV}	-	-	-				<5	ug/kg	TM36/PM12
Natural Moisture Content	15.2	26.3	23.7	12.6	-	-	-				<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	-	-	-				<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0808	0.0088	0.0682	0.0365	0.0240	0.0341	0.0096				<0.0015	g/l	TM38/PM20
Organic Matter	25.2	1.5	41.6	17.7	-	-	-				<0.2	%	TM21/PM24
pH #	7.90	7.83	7.31	8.09	8.47	8.23	8.05				<0.01	pH units	TM73/PM11

Matrix : Solid

4 of 12

Client Name: Groundtech Consulting Limited
Reference: GRO-24090
Location: 816 Stockpile Road
Contact: Lucy Denman

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
25/5517	1	CP01	0.50	3	Simon Postlewhite	15/04/2025	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	15/04/2025	Asbestos Fibres	NAD
					Simon Postlewhite	15/04/2025	Asbestos ACM	NAD
					Simon Postlewhite	15/04/2025	Asbestos Type	NAD
25/5517	1	WS01	0.80	6	Simon Postlewhite	15/04/2025	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	15/04/2025	Asbestos Fibres	NAD
					Simon Postlewhite	15/04/2025	Asbestos ACM	NAD
					Simon Postlewhite	15/04/2025	Asbestos Type	NAD
25/5517	1	WS04	0.20	9	Simon Postlewhite	15/04/2025	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	15/04/2025	Asbestos Fibres	Fibre Bundles
					Simon Postlewhite	15/04/2025	Asbestos ACM	Asbestos Cement
					Simon Postlewhite	15/04/2025	Asbestos Type	Chrysotile
					Simon Postlewhite	24/06/2025	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					Simon Postlewhite	24/06/2025	Total Detailed Gravimetric Quantification (% Asb)	2.333 (mass %)
					Simon Postlewhite	24/06/2025	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	2.333 (mass %)
					Remigiusz Blichowski	26/06/2025	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					Remigiusz Blichowski	26/06/2025	Asbestos Gravimetric & PCOM Total	2.333 (mass %)
25/5517	1	WS03	0.30	12	Miriam Silverlock	15/04/2025	General Description (Bulk Analysis)	Brown soil, stones
					Miriam Silverlock	15/04/2025	Asbestos Fibres	NAD
					Miriam Silverlock	15/04/2025	Asbestos ACM	NAD
					Miriam Silverlock	15/04/2025	Asbestos Type	NAD

[illegible]

It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 25/5517

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).

Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitatively, with a matrix specific limit of detection.

Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution
AB	x10 Dilution

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 25/5517

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35 degrees Celsius or 105 degrees Celsius. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 degrees Celsius. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

EMT Job No: 25/5517

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM131	Quantification of Asbestos Fibres and ACM based on HSG 248 Second edition:2021, HSG 264 Second edition:2012, HSE Contract Research Report No.83/1996, MDHS 87:1998, WM3 1st Edition v1.1:2018	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes

APPENDIX 5 - Geotechnical Testing Results



LABORATORY REPORT



Contract Number: PSL25/2607

Report Date: 24 April 2025
Client's Reference: GRO-24090
Client Name: Groundtech Consulting
First Floor
Lloyd House
Orford Court
Greenfold Way
WN7 3XJ

For the attention of: Lucy Denman

Contract Title: 816 Stockport Road

Date Received: 07/04/2025
Date Commenced: 07/04/2025
Date Completed: 24/04/2025

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Managing Director)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)


D Nicholson
(Senior Technician)

T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

816 Stockport Road

Contract No:

PSL25/2607

Client Ref:

GRO-24090

SUMMARY OF SOIL CLASSIFICATION TESTS

BS 1377 - Part 2 : 2022 in accordance with BS EN ISO 17892 (as below)

[illegible]

Water Content - BS 1377 - Part 2 : 2022 : Clause 4 in accordance with BS EN ISO 17892 - 1 : 2014 + A1 : 2022

Linear Shrinkage - BS 1377 - Part 2 : 2022 : Clause 7

Particle Density (Gas Jar method) - BS 1377 - Part 2 : 2022 : Clause 9

Liquid, Plastic Limit & Plasticity Index - BS 1377 - Part 2 : 2022 : Clause 5 & 6 in accordance with BS EN ISO 17892 - 12 : 2018 + A2 : 2022

SYMBOLS : NP = Non Plastic



816 Stockport Road

Contract No:

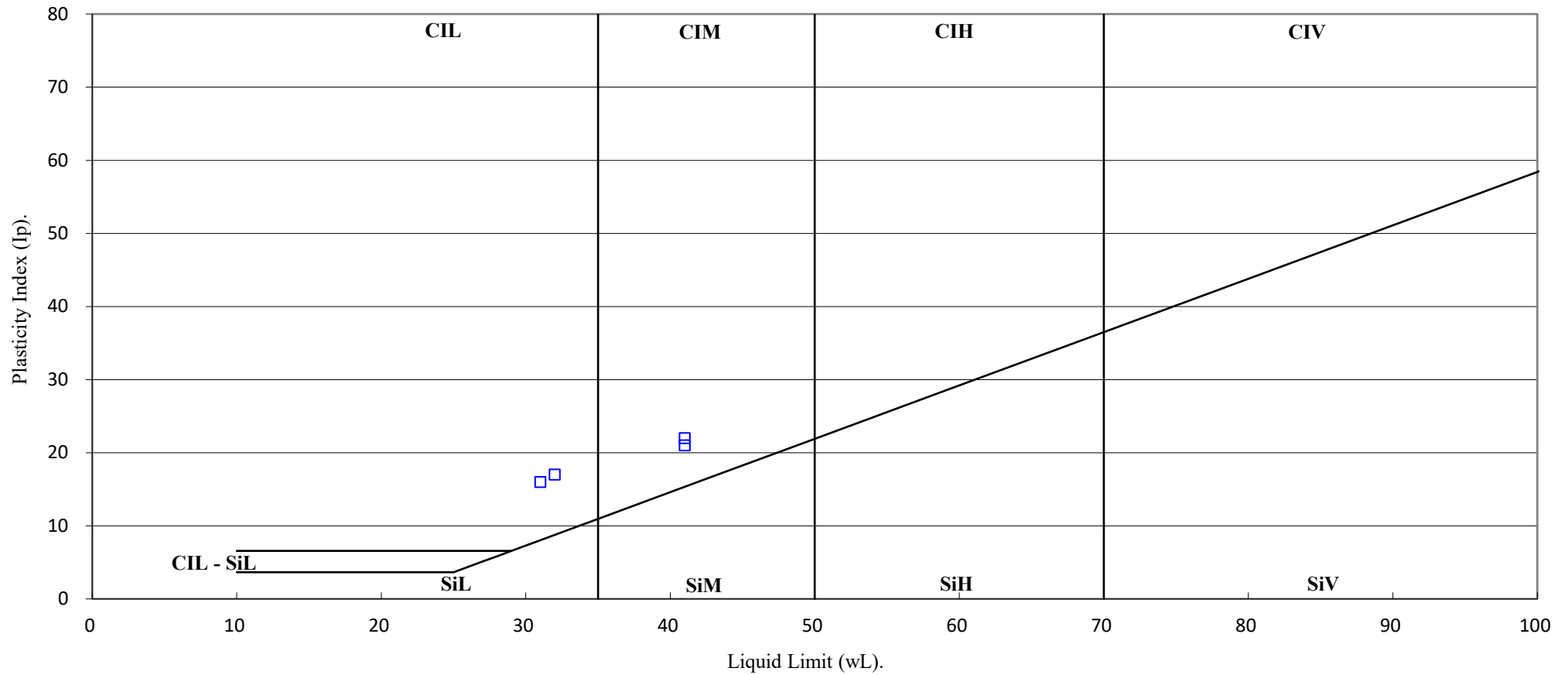
PSL25/2607

Client Ref:

GRO-24090

PLASTICITY CHART

BS EN ISO 14688-2:2017 Clause 4.4



816 Stockport Road

Contract No:

PSL25/2607

Client Ref:

GRO-24090

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST

BS 1377 - Part 2 : 2022 : Clause 28 in accordance with BS EN ISO 17892 - 8 : 2018

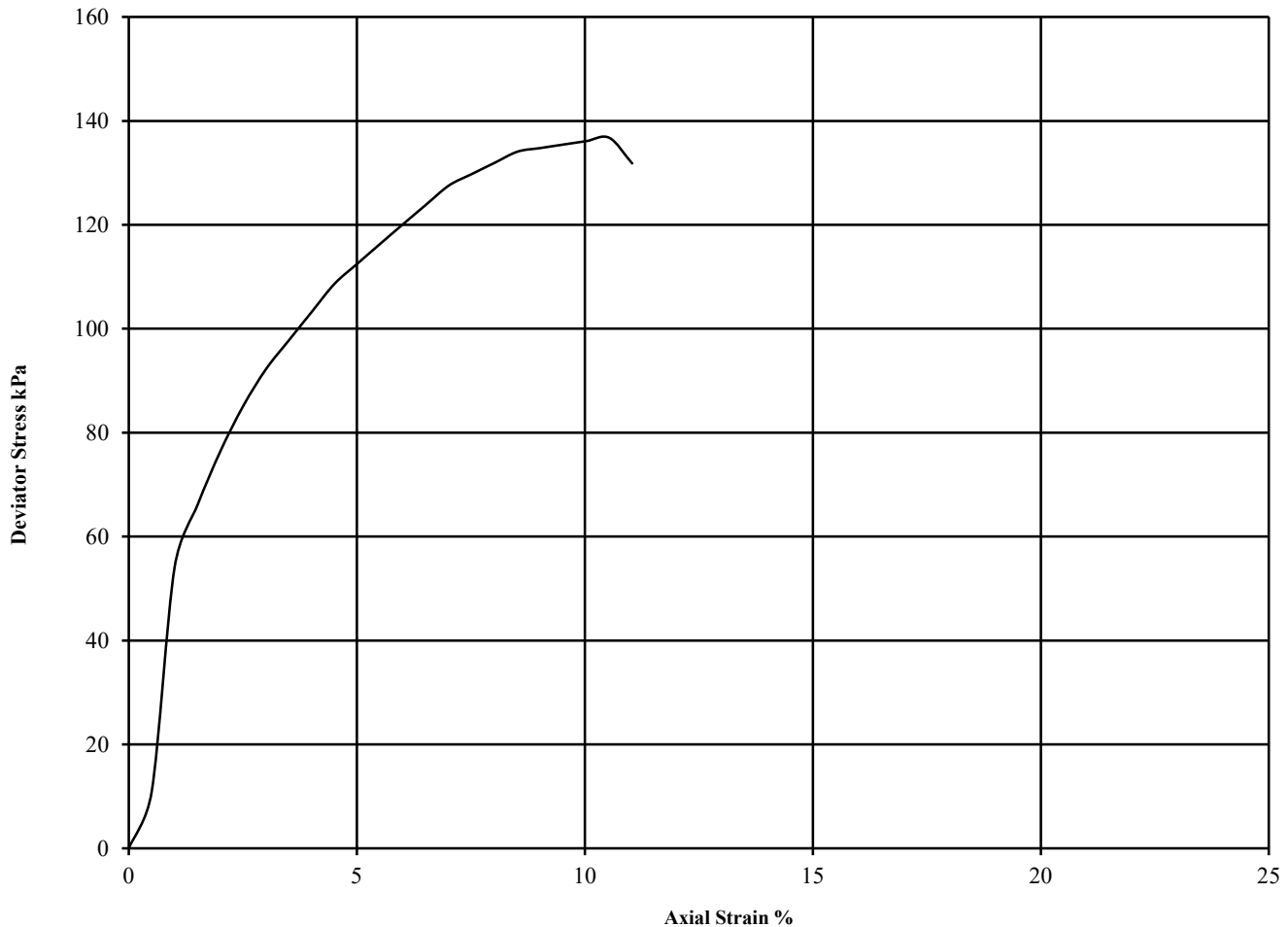
Hole Number: CP01

Top Depth (m): 3.00

Sample Number

Base Depth (m): 3.45

Sample Type U



Diameter (mm):		38		Height (mm):		76		Test:	UU Single Stage		Remarks:
Specimen	Water Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)				Undisturbed Sample Sample taken from top of tube Rate of strain = 2.6 %/min See summary of soil descriptions 38mm due to insufficient material.
1	12.1	2.15	1.92	60	137	68	10.0				



816 Stockport Road

Contract No:

PSL25/2607

Client Ref:

GRO-24090

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST

BS 1377 - Part 2 : 2022 : Clause 28 in accordance with BS EN ISO 17892 - 8 : 2018

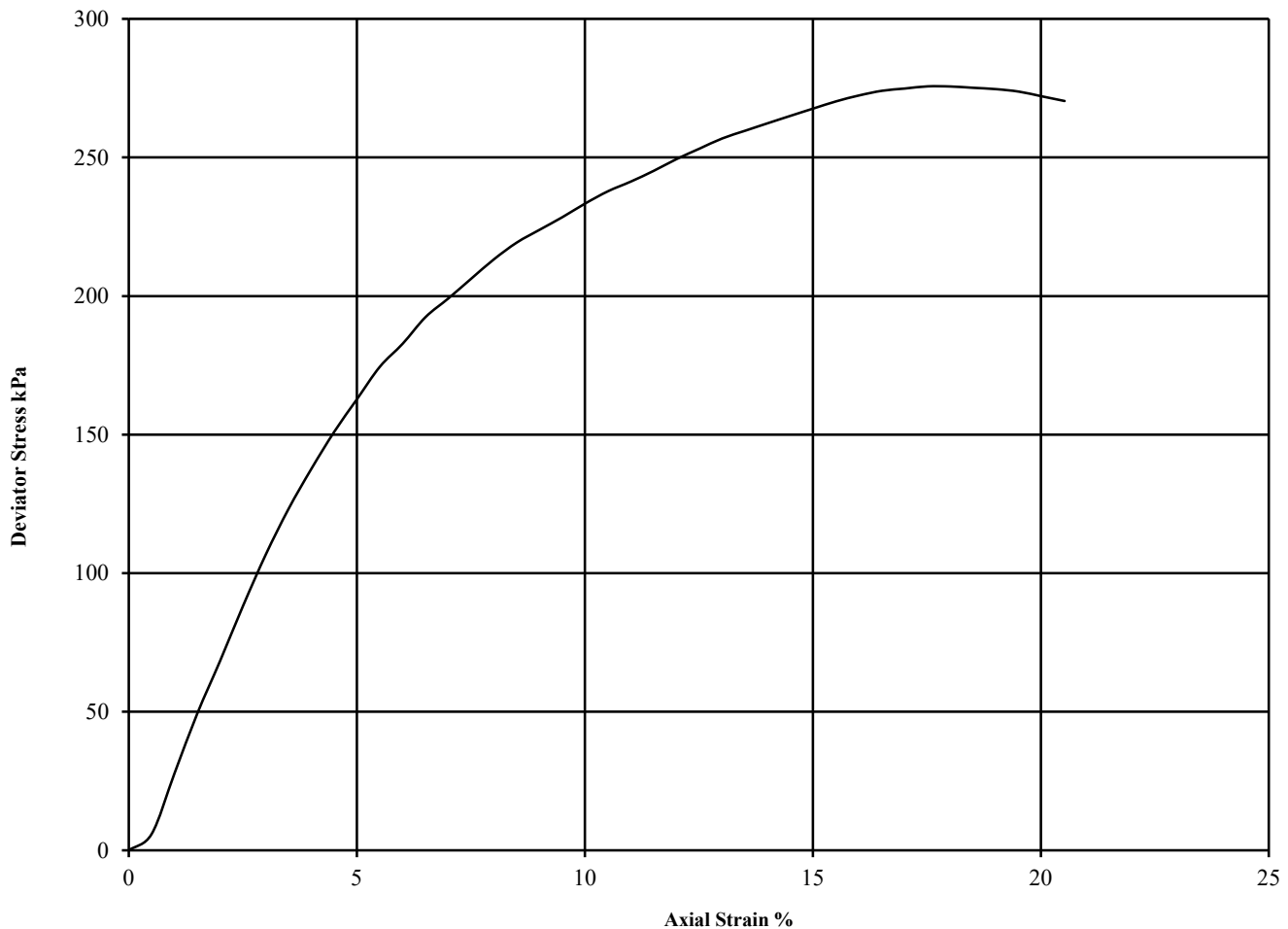
Hole Number: CP01

Top Depth (m): 5.00

Sample Number

Base Depth (m): 5.45

Sample Type U



Diameter (mm):		Height (mm):			Test:		UU Single Stage		Remarks:
Specimen	Water Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)		
1	12.1	2.23	1.99	100	276	138	17.0	Plastic	



816 Stockport Road

Contract No:

PSL25/2607

Client Ref:

GRO-24090

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST

BS 1377 - Part 2 : 2022 : Clause 28 in accordance with BS EN ISO 17892 - 8 : 2018

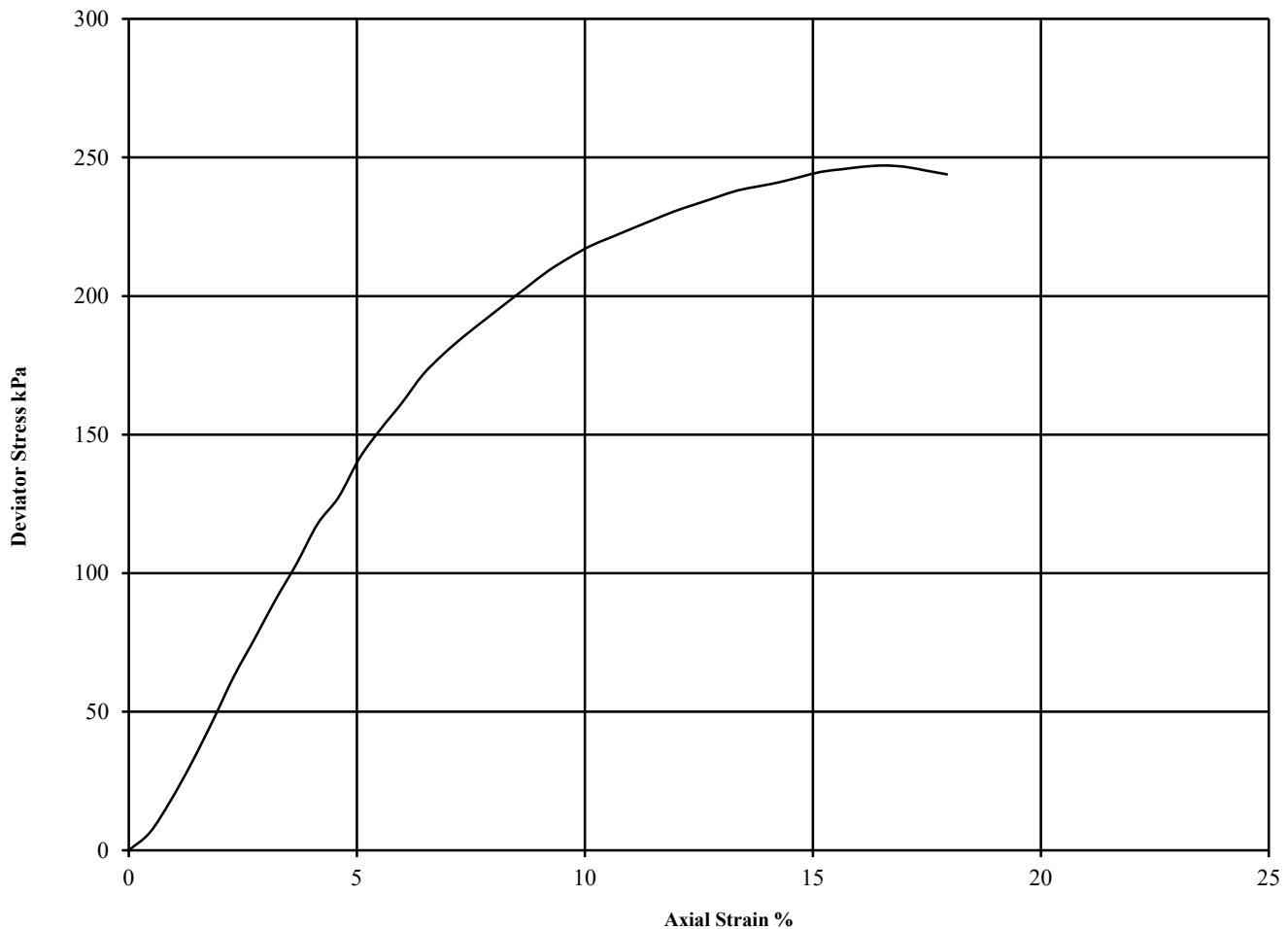
Hole Number: WS02

Top Depth (m): 1.50

Sample Number

Base Depth (m): 2.00

Sample Type U



Diameter (mm):		80		Height (mm):		174		Test:	UU Single Stage		Remarks:
Specimen	Water Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)		Undisturbed Sample Sample taken from top of tube Rate of strain = 1.1 %/min See summary of soil descriptions		
1	15.4	2.12	1.84	30	247	124	16.1				



816 Stockport Road

Contract No:

PSL25/2607

Client Ref:

GRO-24090

Groundtech Consulting Limited
PO Box 499
Manchester
United Kingdom
M28 8EE



4225



Attention : Lucy Denman
Date : 28th April, 2025
Your reference : GRO-24090
Our reference : Test Report 25/5941 Batch 1
Location : 816 Stockport Road
Date samples received : 11th April, 2025
Status : Final Report
Issue : 202504281347

One sample was received for analysis on 11th April, 2025 and was scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 0.796 kg of CO2

Scope 1&2&3 emissions - 1.882 kg of CO2

Authorised By:



Sean English
Project Coordinator

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-24090
Location: 816 Stockport Road
Contact: Lucy Denman
EMT Job No: 25/5941

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

[illegible]

Client Name:	Groundtech Consulting Limited
Reference:	GRO-24090
Location:	816 Stockport Road
Contact:	Lucy Denman

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 25/5941

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).

Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitatively, with a matrix specific limit of detection.

Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 25/5941

[illegible]



APPENDIX 6 - Gas Monitoring Results

SITE NAME:		816 STOCKPORT ROAD				ENGINEER:		Georgia Barnes				
CLIENT:		RAJA ASAD				DATE:		09/04/2025				
JOB NO:		GRO-24090										
Pressure Trend:		Falling	Weather:	CLEAR			Equipment:		GFM 436			
Ambient:		O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)					
Start		20.7	0.0	0.0	0.0	0.0	0.0					
Finish		20.7	0.0	0.0	0.0	0.0	0.0					

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q _{hg} CO ₂ (l/hr)	Q _{hg} CH ₄ (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
WS01	0.0	0.0	0.00	0.0	0.0	0.0	0.7	0.6	19.2	18.4	0.0	0.0	0.0	0.0	0.0007	0.0000	1024	-	N	N/A	N/A	2.40
WS03	0.0	0.0	0.00	0.0	0.0	0.0	3.2	3.2	15.2	15.2	0.0	0.0	12.0	10.0	0.0032	0.0000	1023	-	N	N/A	N/A	NGW
WS04	0.0	0.0	0.00	0.0	0.0	0.0	0.2	0.1	20.3	20.2	0.0	0.0	0.0	0.0	0.0002	0.0000	1022	-	N	N/A	N/A	2.83

Notes:

PERMANENT GROUND GAS MONITORING FORM



SITE NAME:	816 STOCKPORT ROAD					ENGINEER:	Georgia Barnes						
CLIENT:	RAJA ASAD					DATE:	22/04/2025						
JOB NO:	GRO-24090												
Pressure Trend:	Steady	Weather:	Clear			Equipment:	GFM 436						
Ambient:	O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)							
Start	20.7	0.0	0.0	0.0	0.0	0.0							
Finish	20.7	0.0	0.0	0.0	0.0	0.0							

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q _{hg} CO ₂ (l/hr)	Q _{hg} CH ₄ (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
WS01	0.0	0.0	0.00	0.0	0.0	0.0	0.8	0.7	18.8	18.5	0.0	0.0	0.0	0.0	0.0008	0.0000	1006	-	N	N/A	N/A	2.70
WS03	0.0	0.0	0.00	0.0	0.0	0.0	0.5	0.5	15.7	15.3	0.0	0.0	0.0	0.0	0.0005	0.0000	1005	-	N	N/A	N/A	NGW
WS04	0.0	0.0	0.00	0.0	0.0	0.0	0.2	0.2	19.4	19.1	0.0	0.0	0.0	0.0	0.0002	0.0000	1006	-	N	N/A	N/A	2.89

Notes:

SITE NAME:		816 STOCKPORT ROAD				ENGINEER:		William Sandiford Mitchell				
CLIENT:		RAJA ASAD				DATE:		07/05/2025				
JOB NO:		GRO-24090										
Pressure Trend:		Steady	Weather:	Overcast			Equipment:		GFM 436			
Ambient:		O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)					
Start		20.7	0.0	0.0	0.0	0.0	0.0					
Finish		20.7	0.0	0.0	0.0	0.0	0.0					

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q _{hg} CO ₂ (l/hr)	Q _{hg} CH ₄ (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
WS01	0.0	0.0	0.00	0.0	0.0	0.0	0.5	0.4	20.1	20.0	0.0	0.0	0.0	0.0	0.0005	0.0000	1002	-	N	N/A	N/A	2.70
WS03	0.0	0.0	0.00	0.0	0.0	0.0	1.4	1.3	18.1	17.8	0.0	0.0	0.0	0.0	0.0014	0.0000	1002	-	N	N/A	N/A	NGW
WS04	0.0	0.0	0.00	0.0	0.0	0.0	0.6	0.5	17.5	18.3	0.0	0.0	0.0	0.0	0.0006	0.0000	1003	-	N	N/A	N/A	2.89

PERMANENT GROUND GAS MONITORING FORM



SITE NAME:		816 STOCKPORT ROAD				ENGINEER:		Georgia Barnes				
CLIENT:		RAJA ASAD				DATE:		20/05/2025				
JOB NO:		GRO-24090										
Pressure Trend:		Steady	Weather:	Overcast			Equipment:		GFM 436			
Ambient:		O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)					
Start		20.6	0.0	0.0	0.0	0.0	0.0					
Finish		20.6	0.0	0.0	0.0	0.0	0.0					

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q _{hg} CO ₂ (l/hr)	Q _{hg} CH ₄ (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
WS01	0.0	0.0	0.00	0.0	0.0	0.0	0.4	0.4	20.1	20.0	0.0	0.0	0.0	0.0	0.0004	0.0000	1002	-	N	N/A	N/A	2.59
WS03	0.0	0.0	0.00	0.0	0.0	0.0	1.6	1.1	19.8	19.7	0.0	0.0	0.0	0.0	0.0016	0.0000	1002	-	N	N/A	N/A	NGW
WS04	0.0	0.0	0.00	0.0	0.0	0.0	0.5	0.5	19.6	19.3	0.0	0.0	0.0	0.0	0.0005	0.0000	1003	-	N	N/A	N/A	2.91

Notes:



APPENDIX 7 - Generic Screening Values (Residential Without Plant Uptake)

Generic Assessment Criteria (GAC)							<div>GROUNDTECH</div> <div>CONSULTING</div>	
Proposed End Use	Unit	Residential with Plant Uptake			Residential without plant uptake			Source
SOM	%	1	2.5	6	1	2.5	6	
Arsenic	mg/kg	37	37	37	40	46	40	LQM S4ULs
Beryllium	mg/kg	1.7	1.7	1.7	1.7	1.7	1.7	LQM S4ULs
Boron (water soluble)	mg/kg	290	290	290	11000	11000	11000	LQM S4ULs
Cadmium	mg/kg	11	11	11	85	85	85	LQM S4ULs
Chromium (Total)	mg/kg	910	910	910	910	910	910	LQM S4ULs
Chromium (VI)	mg/kg	6	6	6	6	6	6	LQM S4ULs
Copper	mg/kg	2400	2400	2400	7100	7100	7100	LQM S4ULs
Lead	mg/kg	200	200	200	310	310	310	DEFRA C4SLs
Mercury	mg/kg	1.2	1.2	1.2	1.2	1.2	1.2	LQM S4ULs
Nickel	mg/kg	180	180	180	180	180	180	LQM S4ULs
Selenium	mg/kg	250	250	250	430	430	430	LQM S4ULs
Vanadium	mg/kg	410	410	410	1200	1200	1200	LQM S4ULs
Zinc	mg/kg	3700	3700	3700	40000	40000	40000	LQM S4ULs
Aliphatic EC 5 - 6	mg/kg	42	78	160	42	78	160	LQM S4ULs
Aliphatic EC 6 - 8	mg/kg	100	230	530	100	230	530	LQM S4ULs
Aliphatic EC 8 - 10	mg/kg	27	65	150	27	65	150	LQM S4ULs
Aliphatic EC 10 - 12	mg/kg	130 (48) ^{vap}	330 (118) ^{vap}	760 (283) ^{vap}	130 (48) ^{vap}	330 (118) ^{vap}	770 (283) ^{vap}	LQM S4ULs
Aliphatic EC 12 - 16	mg/kg	1100 (24) ^{sol}	2400 (59) ^{sol}	4300 (142) ^{sol}	1100 (24) ^{sol}	2400 (59) ^{sol}	4400 (142) ^{sol}	LQM S4ULs
Aliphatic EC 16 - 35	mg/kg	65000 (8.48) ^{f, sol}	92000 (21) ^{f, sol}	110000 ^f	65000 (8.48) ^{f, sol}	92000 (21) ^{f, sol}	110000 ^f	LQM S4ULs
Aliphatic EC 35 - 44	mg/kg	65000 (8.48) ^{f, sol}	92000 (21) ^{f, sol}	110000 ^f	65000	92000 (21) ^{f, sol}	110000 ^f	LQM S4ULs
Aromatic EC 5 - 7	mg/kg	70	140	300	370	690	1400	LQM S4ULs
Aromatic EC 7 - 8	mg/kg	130	290	660	860	1800	3900	LQM S4ULs
Aromatic EC 8 - 10	mg/kg	34	83	190	47	110	270	LQM S4ULs
Aromatic EC 10 - 12	mg/kg	74	180	380	250	590	1200	LQM S4ULs
Aromatic EC 12 -16	mg/kg	140	330	660	1800	2300	2500	LQM S4ULs
Aromatic EC 16 - 21	mg/kg	260 ^f	540 ^f	930 ^f	1900	1900	1900	LQM S4ULs
Aromatic EC 21 - 35	mg/kg	1100 ^f	1500 ^f	1700 ^f	1900	1900	1900	LQM S4ULs
Aromatic EC 35 - 44	mg/kg	1100 ^f	1500 ^f	1700 ^f	1900	1900	1900	LQM S4ULs
Benzene	mg/kg	0.087	0.17	0.37	0.38	0.7	1.4	LQM S4ULs
Toluene	mg/kg	130	290	660	880	1900	3900	LQM S4ULs
Ethyl Benzene	mg/kg	47	110	260	83	190	440	LQM S4ULs
Xylene - o	mg/kg	60	140	330	88	210	480	LQM S4ULs
Xylene - m	mg/kg	59	140	320	82	190	450	LQM S4ULs
Xylene - p	mg/kg	56	130	310	79	180	430	LQM S4ULs
MTBE (methyl tert-butyl ether)	mg/kg	49	84	160	-	-	-	CL:AIRE 2010
Acenaphthene	mg/kg	210	510	1100	3000	4700	6000	LQM SAULs
Acenaphthylene	mg/kg	170	420	920	2900	4600	6000	LQM S4ULs
Anthracene	mg/kg	2400	5400	11000	31000	35000	37000	LQM S4ULs
Benzo(a)anthracene	mg/kg	7.2	11	13	11	14	15	LQM S4ULs
Benzo(a)pyrene	mg/kg	2.2	2.7	3	3.2	3.2	3.2	LQM S4ULs
Benzo(b)fluoranthene	mg/kg	2.6	3.3	3.7	3.9	4	4	LQM S4ULs
Benzo(ghi)perylene	mg/kg	320	340	350	360	360	360	LQM S4ULs
Benzo(k)fluoranthene	mg/kg	77	93	100	110	110	110	LQM S4ULs
Chrysene	mg/kg	15	22	27	30	31	32	LQM S4ULs
Dibenzo(ah)anthracene	mg/kg	0.24	0.28	0.3	0.31	0.32	0.32	LQM S4ULs
Fluoranthene	mg/kg	280	560	890	1500	1600	1600	LQM S4ULs
Fluorene	mg/kg	170	400	860	2800	3800	4500	LQM S4ULs
Indeno(123-cd)pyrene	mg/kg	27	36	41	45	46	46	LQM S4ULs
Naphthalene	mg/kg	15	36	85	15	36	85	LQM S4ULs
Phenanthrene	mg/kg	95	220	440	1300	1500	1500	LQM S4ULs
Pyrene	mg/kg	620	1200	2000	3700	3800	3800	LQM S4ULs

APPENDIX 8 - CIRIA Risk Assessment Methodology

Contaminated Land Risk Assessment

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

Hazard Identification ➡ Hazard Assessment ➡ Risk Estimation ➡ Risk Evaluation

LCRM outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. The starting point of the risk assessment is to identify the context of the problem and the objectives of the process.

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

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

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

The likelihood of an event is classified on a four-point system using the following terms and definitions from CIRIA C552:

- **High likelihood:** There is a pollution linkage and an event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution;
- **Likely:** There is a pollution linkage and all the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;
- **Low likelihood:** There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain even over a longer period such event would take place, and is less likely in the short term;
- **Unlikely:** There is a pollution linkage but circumstances are such that it is improbable the event would occur even in the long term.

The severity is also classified using a system based on CIRIA C552. The terms and definitions are:

- **Severe:** Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. A short-term risk to a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
Examples – High concentrations of contaminant on surface of recreation area, major spillage of contaminants from site into controlled waters, explosion causing building to collapse;

- **Medium:** Chronic damage to human health ('significant harm' as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
Examples - Concentrations of contaminants exceed the generic assessment criteria, leaching of contaminants from a site to a Principal or Secondary Aquifer, death of species within a designated nature reserve;
- **Mild:** Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures, services or the environment;
Examples – Pollution of non-classified groundwater or damage to buildings rendering it unsafe to occupy.
- **Minor:** harm, not necessarily significant harm, which may result in financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by use of personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.
Examples – Presence of contaminants at such concentrations PPE is required during site work, loss of plants in landscaping scheme or discolouration of concrete.

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

		Consequences			
		Severe	Medium	Mild	Minor
Probability	Highly likely	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very Low	Very low

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

- **Very high:** There is a high probability that severe harm could arise to a designated receptor from an identified hazard or there is evidence that severe harm is currently happening. This risk, if realised, could result in substantial liability. Urgent investigation and remediation are likely to be required;
- **High:** Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required and remedial works may be necessary in the short term and are likely over the longer term;
- **Moderate:** It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it would be more likely to be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term;
- **Low:** It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild;
- **Very Low:** There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.



APPENDIX 9 - JIWG Receptor Decision Tool



Joint Industry **Working Group**

Asbestos in Soil and Construction & Demolition Materials

Project Reference

GRO-24090

Site Name

816 STOCKPORT ROAD

Client

RAJA ASAD

Run by

CJH

Date

27-Jun-25

Scenario details

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

Score

Select ACM type (run model for each type to generate 'Worst Case' output)

Free dispersed fibres/fibre bundles

2

Extent of degradation of ACMs at outset of work

Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)

4

Friability and degree of bonding by matrix (ACM matrix, not ground materials)

Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)

4

Distribution of Visible Asbestos Across Affected Area

No visible ACMs/fibre bundles

0

Amount of asbestos fibre in selected ACM/fibre type as % of host material

Large quantities - >0.1 %wt/wt

4

Sub-total

14

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking

Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.

It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

Stage 2

Exposure Factors

Score

Anticipated airborne fibre concentration - Control Limit or SALI?

>0.1 fibres/ml (4 Hr TWA) or >0.6 fibres/ml (10 minute STEL)

4

Anticipated duration of exposure to asbestos

< 2 hours in a 7 day period for all persons involved (e.g. Short Duration Work)

1

Activity type and effect on deterioration of ACMs during work

Sampling, manual or mechanical (significant deterioration expected)

2

Best description of primary host material matrix (soil/made ground)

Coarse to Fine Gravel

3

Respirable fibre index for ACM - RIVM report 711701034 (2003)

Low

2

Sub-total

12

Exposure ranking

Medium

Combined hazard and exposure ranking

26

Medium

Stage 3

Risk Assessment Outputs

Probable Licensing Status	Licensed Work
RPE*	EN140 with P3 filter half mask
Dust Suppression**	General mechanical dust suppression
Hygiene/Decontamination***	Mobile self-contained personal decontamination facilities

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.

**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)

***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis



APPENDIX 10 - Waste Classification Report

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



3X2AO-RWV6P-8IHAP

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in **pale yellow**.

Report is invalid if pages are removed.

Job name

EMT-25-5517-Batch-1-202504171209

Description/Comments

Project

GRO-24090

Site

Stockport road

Classified by

Name: **Connor Hastings**
Date: **26 Jun 2025 13:54 GMT**
Telephone:
Company: **Groundtech Consulting Limited**
First Floor, Lloyd House, Orford Court,
Greenfold Way, WN7 3XJ

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:

-

Course

Hazardous Waste Classification

Date

-

Purpose of classification

4 - Classification of Waste Products

Address of the waste

Post Code

SIC for the process giving rise to the waste

Description of industry/producer giving rise to the waste

Description of the specific process, sub-process and/or activity that created the waste

Description of the waste

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	CP01-01/04/2025-0.50m		Hazardous	HP 3(i), HP 7, HP 10, HP 11, HP 14	3
2	WS01-01/04/2025-0.80m		Non Hazardous		6
3	WS04-01/04/2025-0.20m		Hazardous	HP 3(i), HP 7, HP 11	8
4	WS03-01/04/2025-0.30m		Hazardous	HP 3(i), HP 7, HP 11	11
5	WS03-01/04/2025-0.80m		Non Hazardous		14
6	WS02-01/04/2025-1.00m		Non Hazardous		15
7	WS04-01/04/2025-1.00m		Non Hazardous		16

Related documents

#	Name	Description
1	EMT-25-5517-Batch-1-202504171209.HWOL	Element .hwol file used to populate the Job

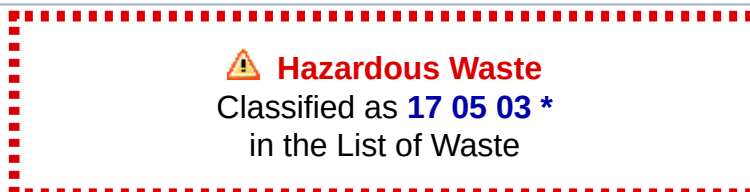
Report

Created by: Connor Hastings

Created date: 26 Jun 2025 13:54 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	17
Appendix B: Rationale for selection of metal species	17
Appendix C: Version	18

Classification of sample: CP01-01/04/2025-0.50m



Sample details

Sample name:	LoW Code:	
CP01-01/04/2025-0.50m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
15.2% (dry weight correction)		

Hazard properties

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"

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene (conc.: 1.48e-06%)
toluene (conc.: 1.74e-06%)
ethylbenzene (conc.: 1.04e-06%)

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

Because of determinands:

xylene (conc.: 2.0e-06%)
TPH (C6 to C40) petroleum group (conc.: 2.361%)

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1A; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

lead compounds with the exception of those specified elsewhere in this Annex (worst case) (Note 1 conc.: 0.347%)

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 2.361%)

HP 10: Toxic for reproduction "waste which has adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring"

Hazard Statements hit:

Repr. 1A; H360Df "May damage the unborn child. Suspected of damaging fertility."

Because of determinand:

lead compounds with the exception of those specified elsewhere in this Annex (worst case) (Note 1 conc.: 0.347%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 2.361%)

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

Aquatic Chronic 1; H410 "Very toxic to aquatic life with long lasting effects."

Because of determinand:

lead compounds with the exception of those specified elsewhere in this Annex (worst case) (Note 1 conc.: 0.347%)

Aquatic Chronic 2; H411 "Toxic to aquatic life with long lasting effects."

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 2.361%)

Determinands

Moisture content: 15.2% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<5 µg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	603-181-00-X	216-653-1	1634-04-4								
2	benzene				17 µg/kg		0.0148 mg/kg	0.00000148 %	✓		
	601-020-00-8	200-753-7	71-43-2								
3	toluene				20 µg/kg		0.0174 mg/kg	0.00000174 %	✓		
	601-021-00-3	203-625-9	108-88-3								
4	ethylbenzene				12 µg/kg		0.0104 mg/kg	0.00000104 %	✓		
	601-023-00-4	202-849-4	100-41-4								
5	xylene				0.023 mg/kg		0.02 mg/kg	0.000002 %	✓		
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								
6	arsenic { arsenic pentoxide }				16.9 mg/kg	1.534	22.502 mg/kg	0.00225 %	✓		
	033-004-00-6	215-116-9	1303-28-2								
7	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	0.3 mg/kg		0.26 mg/kg	0.0000026 %	✓		
	048-001-00-5										
8	copper { dicopper oxide; copper (I) oxide }				95 mg/kg	1.126	92.847 mg/kg	0.00928 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
9	mercury { mercury }				0.6 mg/kg		0.521 mg/kg	0.0000521 %	✓		
	080-001-00-0	231-106-7	7439-97-6								
10	nickel { nickel diiodide }				30 mg/kg	5.324	138.654 mg/kg	0.0139 %	✓		
	028-029-00-4	236-666-6	13462-90-3								
11	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %			<LOD
	028-031-00-5	239-125-2	15060-62-5								
12	zinc { zinc oxide }				254 mg/kg	1.245	274.442 mg/kg	0.0274 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
13	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	3992 mg/kg		3465.278 mg/kg	0.347 %	✓		
	082-001-00-6										
14	chromium in Cr(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
15	TPH (C6 to C40) petroleum group		TPH		27194 mg/kg		23605.903 mg/kg	2.361 %	✓		
16	pH		PH		7.9 pH		7.9 pH	7.9 pH			

#	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							
17	chromium in Cr(III) compounds { (worst case) }		chromium(III) oxide		53.5 mg/kg	1.462	67.876 mg/kg	0.00679 %	✓	
		215-160-9	1308-38-9							
Total:								2.767 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 2000 mg/kg (0.2%)

because: No free phase encountered

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene (conc.: 1.48e-06%)
toluene (conc.: 1.74e-06%)
ethylbenzene (conc.: 1.04e-06%)

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

Because of determinands:

xylene (conc.: 2.0e-06%)
TPH (C6 to C40) petroleum group (conc.: 2.361%)

Classification of sample: WS01-01/04/2025-0.80m

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

Sample details

Sample name:	LoW Code:
WS01-01/04/2025-0.80m	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
26.3% (dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 26.3% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<5 µg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								
2	benzene				<5 µg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
3	toluene				<5 µg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								
4	ethylbenzene				<5 µg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4								
5	xylene				<0.005 mg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								
6	arsenic { arsenic pentoxide }				4.6 mg/kg	1.534	5.587 mg/kg		0.000559 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
7	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.1 mg/kg		<0.1 mg/kg		<0.00001 %		<LOD
	048-001-00-5										
8	copper { dicopper oxide; copper (I) oxide }				14 mg/kg	1.126	12.48 mg/kg		0.00125 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
9	mercury { mercury }				0.1 mg/kg		0.0792 mg/kg		0.00000792 %	✓	
	080-001-00-0	231-106-7	7439-97-6								
10	nickel { nickel diiodide }				17.1 mg/kg	5.324	72.087 mg/kg		0.00721 %	✓	
	028-029-00-4	236-666-6	13462-90-3								
11	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg		<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5								
12	zinc { zinc oxide }				40 mg/kg	1.245	39.421 mg/kg		0.00394 %	✓	
	030-013-00-7	215-222-5	1314-13-2								
13	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	16 mg/kg		12.668 mg/kg		0.00127 %	✓	
	082-001-00-6										

#	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							
14	chromium in Cr(VI) compounds { chromium(VI) oxide }									
	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
15	TPH (C6 to C40) petroleum group									
			TPH		<38 mg/kg		<38 mg/kg	<0.0038 %		<LOD
16	pH									
			PH		7.83 pH		7.83 pH	7.83 pH		
17	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }									
		215-160-9	1308-38-9		33 mg/kg	1.462	38.188 mg/kg	0.00382 %	✓	
Total:								0.0181 %		

Key

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

Classification of sample: WS04-01/04/2025-0.20m

 **Hazardous Waste**
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:	LoW Code:	
WS04-01/04/2025-0.20m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
23.7% (dry weight correction)		

Hazard properties

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"

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene (conc.: 2.02e-06%)
toluene (conc.: 1.7e-06%)
ethylbenzene (conc.: 8.08e-07%)

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

Because of determinands:

xylene (conc.: 1.29e-06%)
TPH (C6 to C40) petroleum group (conc.: 1.288%)

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1A; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

lead compounds with the exception of those specified elsewhere in this Annex (worst case) (Note 1 conc.: 0.109%)

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 1.288%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 1.288%)

Determinands

Moisture content: 23.7% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
1		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
2		benzene				25	µg/kg		0.0202	mg/kg	0.00000202 %	✓	
		601-020-00-8	200-753-7	71-43-2									
3		toluene				21	µg/kg		0.017	mg/kg	0.0000017 %	✓	
		601-021-00-3	203-625-9	108-88-3									
4	■	ethylbenzene				10	µg/kg		0.008	mg/kg	0.000000808 %	✓	
		601-023-00-4	202-849-4	100-41-4									
5		xylene				0.016	mg/kg		0.0129	mg/kg	0.00000129 %	✓	
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
6	🌿	arsenic { arsenic pentoxide }				37.7	mg/kg	1.534	46.748	mg/kg	0.00467 %	✓	
		033-004-00-6	215-116-9	1303-28-2									
7	🌿	cadmium { ■ cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	1.1	mg/kg		0.889	mg/kg	0.0000889 %	✓	
		048-001-00-5											
8	🌿	copper { dicopper oxide; copper (I) oxide }				954	mg/kg	1.126	868.308	mg/kg	0.0868 %	✓	
		029-002-00-X	215-270-7	1317-39-1									
9	🌿	mercury { mercury }				1.4	mg/kg		1.132	mg/kg	0.000113 %	✓	
		080-001-00-0	231-106-7	7439-97-6									
10	🌿	nickel { nickel diiodide }				51.3	mg/kg	5.324	220.806	mg/kg	0.0221 %	✓	
		028-029-00-4	236-666-6	13462-90-3									
11	🌿	selenium { nickel selenate }				2	mg/kg	2.554	4.129	mg/kg	0.000413 %	✓	
		028-031-00-5	239-125-2	15060-62-5									
12	🌿	zinc { zinc oxide }				518	mg/kg	1.245	521.23	mg/kg	0.0521 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
13	🌿	lead { ■ lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	1345	mg/kg		1087.308	mg/kg	0.109 %	✓	
		082-001-00-6											
14	🌿	chromium in Cr(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
15	■	TPH (C6 to C40) petroleum group				15930	mg/kg		12877.93	mg/kg	1.288 %	✓	
				TPH									
16	■	pH				7.31	pH		7.31	pH	7.31 pH		
				PH									
17	🌿	chromium in Cr(III) compounds { ■ chromium(III) oxide (worst case) }				35.1	mg/kg	1.462	41.472	mg/kg	0.00415 %	✓	
			215-160-9	1308-38-9									
Total:											1.567 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 2000 mg/kg (0.2%)
because: No free phase encountered

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene (conc.: 2.02e-06%)

toluene (conc.: 1.7e-06%)

ethylbenzene (conc.: 8.08e-07%)

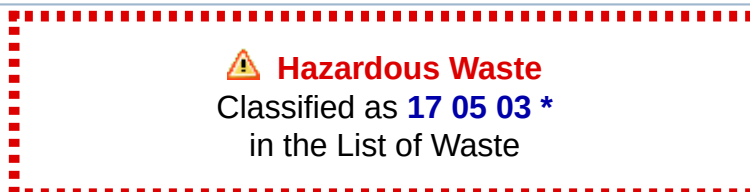
Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

xylene (conc.: 1.29e-06%)

TPH (C6 to C40) petroleum group (conc.: 1.288%)

Classification of sample: WS03-01/04/2025-0.30m



Sample details

Sample name:	LoW Code:	
WS03-01/04/2025-0.30m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
12.6% (dry weight correction)		

Hazard properties

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"

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene (conc.: 1.6e-06%)
toluene (conc.: 3.37e-06%)
ethylbenzene (conc.: 1.51e-06%)

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

Because of determinands:

xylene (conc.: 6.04e-06%)
TPH (C6 to C40) petroleum group (conc.: 0.733%)

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.733%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.733%)

Determinands

Moisture content: 12.6% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<5 µg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							

#		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									
2		benzene				18	µg/kg		0.016	mg/kg	0.0000016 %	✓	
		601-020-00-8	200-753-7	71-43-2									
3		toluene				38	µg/kg		0.0337	mg/kg	0.00000337 %	✓	
		601-021-00-3	203-625-9	108-88-3									
4	■	ethylbenzene				17	µg/kg		0.0151	mg/kg	0.00000151 %	✓	
		601-023-00-4	202-849-4	100-41-4									
5		xylene				0.068	mg/kg		0.0604	mg/kg	0.00000604 %	✓	
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
6	🧪	arsenic { arsenic pentoxide }			1	42.1	mg/kg	1.534	57.35	mg/kg	0.00574 %	✓	
		033-004-00-6	215-116-9	1303-28-2									
7	🧪	cadmium { ■ cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		048-001-00-5											
8	🧪	copper { dicopper oxide; copper (I) oxide }				306	mg/kg	1.126	305.97	mg/kg	0.0306 %	✓	
		029-002-00-X	215-270-7	1317-39-1									
9	🧪	mercury { mercury }				0.8	mg/kg		0.71	mg/kg	0.000071 %	✓	
		080-001-00-0	231-106-7	7439-97-6									
10	🧪	nickel { nickel diiodide }				58.8	mg/kg	5.324	278.036	mg/kg	0.0278 %	✓	
		028-029-00-4	236-666-6	13462-90-3									
11	🧪	selenium { nickel selenate }				4	mg/kg	2.554	9.072	mg/kg	0.000907 %	✓	
		028-031-00-5	239-125-2	15060-62-5									
12	🧪	zinc { zinc oxide }				137	mg/kg	1.245	151.444	mg/kg	0.0151 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
13	🧪	lead { ■ lead compounds with the exception of those specified elsewhere in this Annex (worst case) }				337	mg/kg		299.29	mg/kg	0.0299 %	✓	
		082-001-00-6											
14	🧪	chromium in Cr(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
15	■	TPH (C6 to C40) petroleum group				8252	mg/kg		7328.597	mg/kg	0.733 %	✓	
				TPH									
16	■	pH				8.09	pH		8.09	pH	8.09 pH		
				PH									
17	🧪	chromium in Cr(III) compounds { ■ chromium(III) oxide (worst case) }				121.4	mg/kg	1.462	157.578	mg/kg	0.0158 %	✓	
			215-160-9	1308-38-9									
Total:									0.859 %				

Key

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

Supplementary Hazardous Property Information

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

For this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 2000 mg/kg (0.2%)
because: No free phase encountered

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene (conc.: 1.6e-06%)

toluene (conc.: 3.37e-06%)

ethylbenzene (conc.: 1.51e-06%)

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

Because of determinands:

xylene (conc.: 6.04e-06%)

TPH (C6 to C40) petroleum group (conc.: 0.733%)

Classification of sample: WS03-01/04/2025-0.80m



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

Sample details

Sample name:	LoW Code:	
WS03-01/04/2025-0.80m	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: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	<div> <div>pH</div> <div></div> </div>		PH		8.47 pH		8.47	pH	8.47 pH		
Total:									0%		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: WS02-01/04/2025-1.00m

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

Sample details

Sample name:	LoW Code:	
WS02-01/04/2025-1.00m	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: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH		PH		8.23 pH		8.23 pH	8.23 pH		
Total:								0%		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: WS04-01/04/2025-1.00m



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

Sample details

Sample name:	LoW Code:	
WS04-01/04/2025-1.00m	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: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	<div> <div>pH</div> <div></div> </div>		PH		8.05 pH		8.05	pH	8.05 pH		
Total:									0%		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Appendix A: Classifier defined and non GB MCL determinands

• 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

• cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex

GB MCL index number: 048-001-00-5

Description/Comments: Worst Case: IARC considers cadmium compounds Group 1; Carcinogenic to humans

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

• lead compounds with the exception of those specified elsewhere in this Annex (worst case)

GB MCL index number: 082-001-00-6

Description/Comments: Worst Case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers lead compounds from smelting industries, flue dust and similar to be Carcinogenic category 1A

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 1A; H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html (worst case lead compounds). Review date 29/09/2015

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

Description/Comments: Unknown Oil

Hazard statements taken from WM3 1st Edition 2015

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

• pH (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

• chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332, Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Resp. Sens. 1; H334, Skin Sens. 1; H317, Repr. 1B; H360FD, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

Appendix B: Rationale for selection of metal species

arsenic {arsenic pentoxide}

Worst case

cadmium {cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex}

Cadmium results not speciated.

copper {dicopper oxide; copper (I) oxide}

Copper results not speciated.

mercury {mercury}

Worst case

nickel {nickel diiodide}

Worst case

selenium {nickel selenate}

Worst case

zinc {zinc oxide}

Zinc results not speciated.

lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

Lead results not speciated.

chromium in Cr(VI) compounds {chromium(VI) oxide}

Chromium(VI) compounds not speciated.

chromium in Cr(III) compounds {chromium(III) oxide (worst case)}

Chromium (III) compounds not speciated.

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.2.GB - Oct 2021**
 HazWasteOnline Classification Engine Version: 2025.175.6676.12133 (24 Jun 2025)
 HazWasteOnline Database: 2025.175.6676.12133 (24 Jun 2025)

This classification utilises the following guidance and legislation:

WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021

GB MCL List v2.0 - version 2.0 of 20th October 2023

GB MCL List v3.0 - version 3.0 of 11th January 2024

GB MCL List v4.0 - version 4.0 of 2nd March 2024

GB MCL List v5.0 - version 5.0 of 26th June 2024

GB MCL List v6.0 - version 6.0 of 15th February 2025



APPENDIX 11 - Contaminated Land Legislative Background

Legislative Background

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

- The 1995 Environment Act;
- The Contaminated Land (England) Regulations 2000;
- The DETR circular 02/2000 Environmental Protection Act 1990: Part IIA Contaminated Land.

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

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

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

- **Source** - substances that are potential contaminants or pollutants that may cause harm;
- **Pathway** - a potential route by which contaminants can move from the source to the receptor;
- **Receptor** - a receptor that may be harmed, for example the water environment, humans and water.

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

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

Relevant Guidance Documents

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

- LCRM – Model Procedures;
- Contamination and Environmental Matters - Their implications for Property Professionals (2nd Edition RICS Nov 2003);
- Brownfields – Managing the development of previously developed land – A client's guide, CIRIA 2002;
- DEFRA and Environment Agency publications CLR7 – 10, supported by the TOX guides and SGV guides, dated March 2002;
- DETR Circular 02/2000, Contaminated Land: Implementation of Part IIA of the Environmental Protection Act 1990;
- Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA1990, May 2002;

Relevant Legislative Documents

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

- The Environment Act (1995);
- The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012);
- The Environment Protection Act (1990);
- The Contaminated Land (England) Act (2000);
- Contaminated Land (England) Regulations (2012);
- The Water Resources Act (1991);
- The Pollution Prevention and Control (England and Wales) Regulations (2000);
- The Landfill Regulations (England and Wales) Regulations (2002);
- The Landfill (England and Wales) (Amendment) Regulations (2004);
- Health and Safety at Work Act;

APPENDIX 12 - Limitations

Limitations

This report (Report) forms part of the Services and if applicable Additional Services undertaken by Groundtech Consulting Ltd pursuant to a written contract (Agreement) which contains detailed provisions including express limitations of the liability of Groundtech Consulting Ltd.

This Report was prepared using reasonable skill and care as stated in the Agreement for the purpose including intended end use stated by the Client (Purpose) and the liability of Groundtech Consulting Ltd in respect of the form and content of this Report is no greater than its liability under the Agreement. All records, measurements notes, or any other data (Data) obtained by or for the benefit of the Consultant were obtained at a specific point in time and it may not be assumed by the Client or any person relying on this Report that the Data will remain unaffected by the passage of time, the seasons, weather conditions, changes in the water table or the carrying out and completion of works at the Site.

Unless otherwise agreed this Report has been prepared exclusively for the use and reliance of the Client and may not be relied upon, by any other party except as provided for in the Agreement. A third party who relies on this Report, does so at their own and sole risk and Groundtech Consulting Ltd has no liability to such parties.

Groundtech Consulting Ltd that this Report is to be used for the Purpose. The Purpose was instrumental in determining the scope and of the Services provided. If the Purpose should change, the Client may not be able to rely on the Report without the separate agreement of Groundtech Consulting Ltd.

Since the Report was written, later changes in legislation, statutory requirements and industry best practices have not been considered and this should be allowed for. Ground conditions can also change (see below) and should be investigated if there is any significant delay in acting on the findings of this Report. The period of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the Report inaccurate or unreliable. The information and conclusions in this Report should not be relied upon in the future without written confirmation from Groundtech Consulting Ltd that it is safe to do so.

The observations and conclusions outlined in this Report are based exclusively on the services that were provided as set out in the agreement between the client and Groundtech Consulting Ltd.

Groundtech Consulting Ltd is not liable for the existence of any condition, the discovery of which would require additional investigation outside the agreed scope of works or core competency. The Report is based upon Groundtech Consulting Ltd's observations of existing physical conditions at the Site gained from site reconnaissance together with interpretation of information including documentation, obtained from third parties and from the Client on the history and usage of the Site. The findings and recommendations contained in this Report are based in part upon information provided by third parties, and Groundtech Consulting Ltd have relied upon such information assuming it to be correct.

Groundtech Consulting Ltd accepts no responsibility for errors or inaccuracies in third party information presented in this Report. Groundtech Consulting Ltd was not authorised to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services or Additional Services. Groundtech Consulting Ltd is not liable for any inaccurate information, misrepresentation of data or conclusions, which may inform the scope of investigation undertaken by Groundtech Consulting Ltd and forms the contract with the client.



Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions may also vary due to the ground's heterogeneous properties and because investigation exploratory locations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this Report, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater conditions, together with other constraints such as the position of any existing structures and underground utilities. If so stipulated in the Agreement, geo-environmental testing was carried out for a limited number of parameters based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

Any groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The groundwater level often has not had time to reach equilibrium and a monitoring period is required. Furthermore, groundwater levels are subject to seasonal variation or changes in local drainage conditions and groundwater levels may occur at other times of the year which are higher than were recorded during this investigation.

Any site drawings provided in this Report are preliminary and used to present the general relative locations of features on, and surrounding, the Site.

