



GROUNDTECH
CONSULTING

29 TO 31 MACLURE ROAD, ROCHDALE

SUPPLEMENTARY GEO-ENVIRONMENTAL
APPRAISAL

ROCHDALE BOROUGH COUNCIL

JANUARY 2026

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SUMMARY

Site Details	
Site Location	<i>The site is located in Rochdale Town Centre and is approximately centred on National Grid Reference 389922, 412707.</i>
Site Area	<i>At the time of the investigation, demolition of the previous building on site had taken place and the site area was surfaced with demolition rubble comprising of dark brown gravelly Sand with cobbles of brick and concrete.</i> <i>In the north of the site, there is an existing three storey brick build building which is to remain as part of the proposed development. To the east of the building, a staircase is present leading down to a basement in the existing building.</i>
Ground Model	
Made Ground	<i>Made Ground was encountered in all exploratory hole locations to between 0.4m and 1.5m begl. Shallower Made Ground was encountered in the south of the site in WS05 and WS06 to depths of 0.4m and 0.45m begl respectively getting increasingly thicker towards the north of the site where the deepest Made Ground of 1.5m begl was recorded in WS03.</i> <i>The Made Ground comprised entirely of one population of black gravelly fine to coarse Sand with minor constituents of brick and concrete with a low cobble content of brick.</i>
Natural Soils	<i>Brown gravelly Sand and sandy Gravel with minor constituents of siltstone and occasional clay bands was encountered in all borehole locations from minimum depths of between 0.8m and 1.5m begl to a maximum depth of 23.0m begl.</i> <i>Firm brown sandy Clay was encountered in CP01 and CP02 from depths of between 23.0m and 23.5m begl to a depth of 25.0m begl.</i>
Bedrock	<i>Bedrock was not encountered during the Ground Investigation.</i>
Groundwater	<i>Groundwater seepages were encountered in WS01, CP01 and CP02 between the depths of 2.45m and 23.0m begl.</i>
Ground Engineering Assessment	
Foundations	<i>Shallow strip/pad foundations may be a suitable option for the proposed development depending on the proposed loadings. Alternatively, piles would be suitable end bearing in the deeper medium dense granular deposits.</i>
Highways	<i>CBR values of greater than 5% are likely to be achieved in undisturbed natural soils for pavement design purposes.</i>
Sustainable Drainage System (SuDS)	<i>The use of SuDS drainage is not indicated to be feasible due to the small area of site and limited space for an attenuation tank system.</i>
Constraints	<i>The existing building and area immediately east contain a basement, the depth of the foundations as to be outside the zone of influence of the existing foundations and basement.</i>

	<i>Appropriate good materials management will have to be in practice throughout the enabling and construction works.</i> <i>Substructure may still be present beneath the site associated with the former building and will need to be grubbed up.</i> <i>Proximity to adjacent properties and Metrolink station should be considered during the development.</i> <i>A fault is also indicated to run through site, foundations within 25m of the fault should be appropriately reinforced.</i> <i>Significantly high loadings are anticipated as part of the proposed development which may preclude the use of shallow foundation types.</i> <i>The Mining Remediation Authority report conducted by NX Consulting resulted in the site being at low risk from historic coal mine workings.</i>
GQRA and Revised (PL) Assessment	
Human Health	<i>Elevated concentrations of heavy metals and PAHs have been recorded through laboratory testing, the development plans indicate that the site is to be completely covered in hardsurfacing which will break the linkage. A risk will only exist if soft landscaping is to be included in the development. The risk to Human Health is considered to be Moderate to Low.</i>
Controlled Waters	<i>No mobile contamination has been encountered, groundwater is not considered to be a sensitive resource, no significant groundwater body exists in the superficial deposits and a clay layer is present between impacted soils and the bedrock aquifer. The nearest surface water is greater than 250m from site and the controlled waters risk is Low.</i>
Permanent Ground Gas	<i>Gas monitoring results place the site in CS2 due to high concentrations of carbon dioxide and gas precautions are required as part of the development. The ground gas risk is Moderate to High. The site is not in an area where radon precautions are required.</i>
Final Appraisal	

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

- *Production of Remedial Specification*
- *Speciated mercury testing*
- *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>
GRO-25277-P01	-	Project Location Plan
GRO-25277-P02	-	Exploratory Hole Location Plan
GRO-25277-P03	-	Generalised Ground Model
GRO-25277-P04A to P04E	-	Foundation Inspection Pit Sections
GRO-25277-P05	-	Revised Illustrative Conceptual Site Model (CSM)

1.0 INTRODUCTION

1.1 Project Objectives

Groundtech Consulting Limited have been instructed by Oak Construction on behalf of Rochdale Borough Council to undertake a Geo-Environmental Appraisal for a site at Maclure Road in Rochdale.

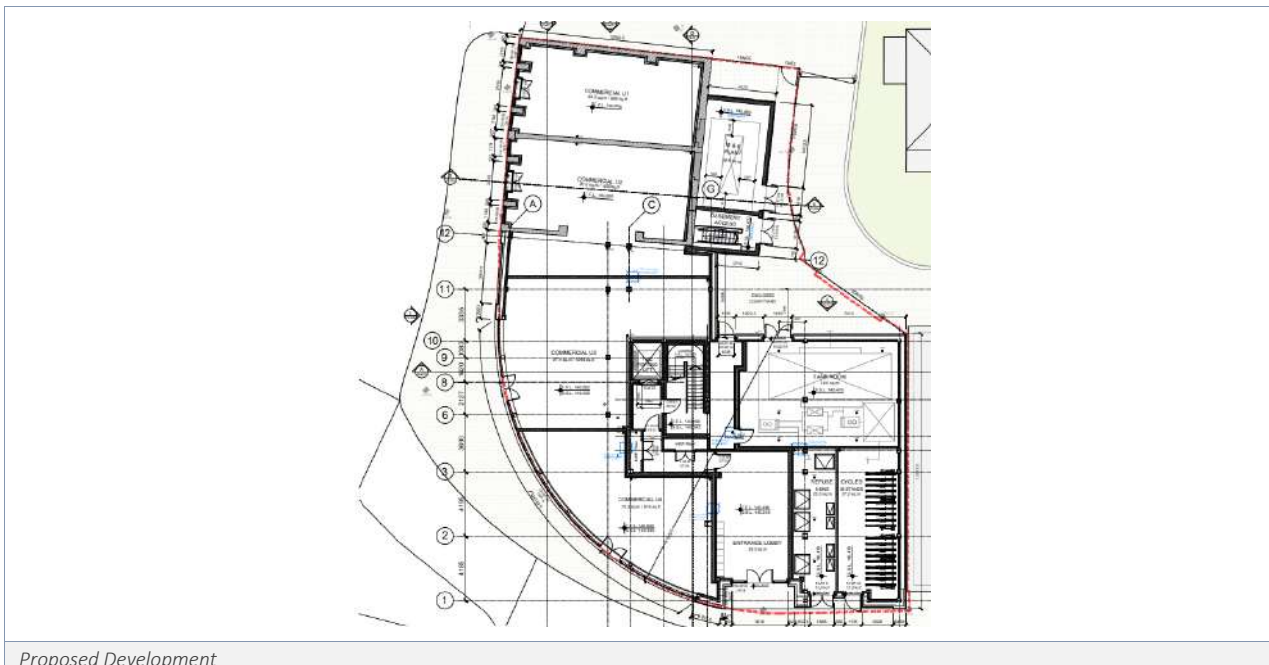
A previous Phase 1 Preliminary Risk Assessment and Phase 2 Geo-Environmental Report has been completed by NX Consulting Engineers, referenced NX570 and dated September 2024. A summary of the relevant information is provided in *Section 3.0* of this appraisal.

A main investigation was undertaken in accordance with BS 5930:2020, BS 10175:2017, BS 8576:2013, The UK Specification for Ground Investigation and Eurocode 7 to revise the Conceptual Site Model (CSM) post demolition and quantify the level of risk identified in the previous reports. The Appraisal has been prepared in accordance with current UK Legislation and to discharge Land Quality pre-commencement planning conditions.

The report has been undertaken to fulfil the requirements of a risk assessment in accordance with current LCRM risk assessment guidance

1.2 Proposed Development

The proposed development is mixed residential and commercial end use comprising the construction of a six storey building adjoining onto an existing three storey building with a basement. The ground floors are to be occupied by commercial units with residential apartments on the remaining floors. There will also be a cycle store in the south east, tank room in the east and enclosed courtyard in the north east.



1.3 Limitations

This Geo-Environmental Appraisal is based on information obtained from a number of sources, and the information is assumed to be correct.

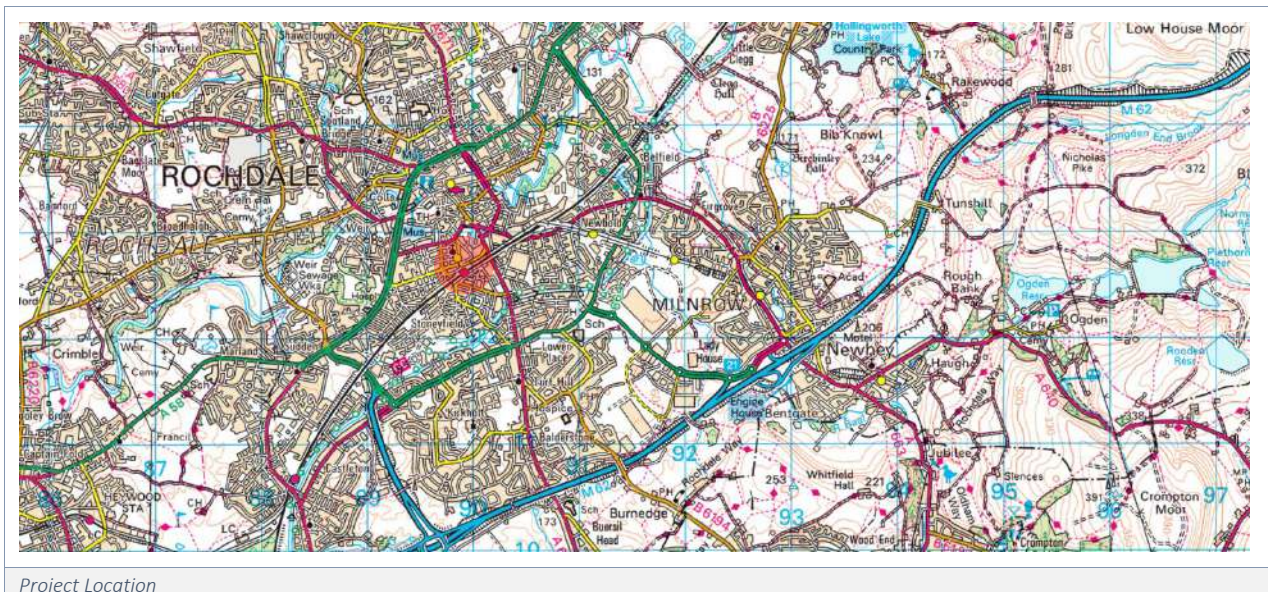
Other conditions may exist on the site that have not been taken into account in this assessment as they are outside the scope of works. Groundtech Consulting are not responsible for these circumstances that are not outlined in the report.

The assessment has been prepared for the exclusive use of the client. No third parties may rely on or reproduce the contents of the report without the written permission of Groundtech Consulting Limited. If any unauthorised third party comes into possession of the report they rely on it at their own risk and Groundtech Consulting Limited will not be obliged to provide a duty of care.

2.0 SITE SETTING

2.1 Location

The site is located in Rochdale Town Centre, as shown on the Project Location Plan *GRO-25277-P01*. The site is approximately centred on National Grid Reference 389922, 412707.



Access to the site is gained off Fire Station Yard to the north of the site.

2.2 Site Description

The site is irregular in shape, approximately 0.08 hectares in area and generally topographically level.

Site Features

At the time of the investigation, demolition of the previous building onsite had taken place and the site area was surfaced with demolition rubble comprising dark brown gravelly sand with cobbles of brick and concrete.

This is with the exception of the northern end of the site, where an existing three storey building of brick construction is present, previous attached to the demolished buildings. This building is indicated to remain as part of the proposed development.

A small hardsurfaced area is present to the east of the building, a steel staircase is present here leading down to the basement of this building which is located onsite.

Site Boundaries and Surrounding Area

The site was bounded by heras fencing to the south and west, AlWasilah Learning Academy building bounds the east and the site is unbounded to the north.

The site is surrounded by following features/land uses:

- North - Commercial and residential land use
- East - Commercial buildings
- South - Station Road followed by Rochdale Train Station
- West - Maclure Road and Tram station

Site photographs are presented in *Appendix 2*.

3.0 SUMMARY OF PREVIOUS INVESTIGATION

3.1 Introduction

A previous Phase 1 Desk Study and Phase 2 Geoenvironmental Report has been undertaken at the site by NX Consulting referenced NX570 and dated September 2024. The relevant information is summarised below and throughout the report.

3.2 Site History

Earliest historical records from 1851 indicate the site was undeveloped, with a small part in the west of the site forms part of a landscaped area. Lancashire railway lines are located circa 75m south east of site and a mill is shown 100m north east of the site. Between 1851 and 1910 little change is shown on site, several industrial land uses are shown around the site including Rochdale station approximately 50m south east, Railway leather works and mills.

In 1910 an unnamed building is shown in the north west of the site and Maclure Road is shown to have been constructed to the west of the site.

By 1975 a second building occupies the rest of the site. Between 1910 and 1975 the surrounding area is occupied by residential housing, fire station circa 15m north, garage 80m south west and works 110m south west.

Maps from 1985/98 show 33 to 41 Maclure Road being labelled as a garage. No change is indicated until the present day where 33 to 41 Maclure Road is shown to have been redeveloped with four commercial units.

3.3 Geology and Hydrogeology

Made Ground

Made Ground is not indicated to be present beneath the site, however is anticipated due to past and current developments. Infilled ground is indicated 20m south west of the site.

Superficial Deposits

The site is indicated to be underlain by Glaciofluvial deposits comprising Sand and Gravel and is classified as a Secondary A Aquifer.

Bedrock Geology

The bedrock geology underlying the site is indicated to be the Old Lawrence Rock which comprises Sandstone and the Pennine Lower Coal Measures which comprises interbedded Mudstone, Sandstone, Siltstone and bands of Coal. The bedrock is classified as a Secondary A Aquifer.

An unnamed fault is also indicated to run through site.

The Mining Remediation Authority report conducted by NX Consulting resulted in the site being at low risk from historic coal mine workings and confirmed that no further work with regards to coal mine workings was required.

The site is not indicated to lie within 500m of a Source Protection Zone and there are no groundwater abstraction wells within 500m of the site.

3.4 Hydrology

There are no surface water features within 250m of site. The nearest surface water feature is the Rochdale Canal circa 530m south of the site.

The site is not recorded to be at risk of flooding from rivers and the sea.

3.5 Preliminary Conceptual Site Model

The following risks were identified by NX Consulting:

Receptor	Risk	Discussion
Site End Users from Contaminated Soils	Moderate	Made Ground is anticipated to be present beneath the site which could be contaminated with a range of CoC including heavy metals, PAHs, speciated hydrocarbons and asbestos.
Site End Users from Inhalation of Vapours	Moderate	The site was formerly utilised as a garage, therefore a vapour risk may be present if any spills/leaks had occurred.
Potable Water Supply Pipe	Moderate	Made Ground may be present at installation depth which could be contaminated with organic contaminants due to the sites former use as a garage.
Site End Users from Inhalation of Gas	Moderate to Low	Made Ground may be present beneath the site which could be a source of ground gas.
Controlled Waters	Moderate to Low	Sites previous use as a garage may mean that mobile contamination may be present, significant distance to nearest surface water.

3.6 Scope of Works

The following scope of works were completed by NX Consulting between the dates of 13th August and 14th August 2024, and 2nd September and 4th September 2024:

- 4 No. windowless sample boreholes (WS01 to WS04) were drilled to depths of between 3.0m and 4.0m begl).
- 1 No. cable percussive borehole (CP01) was drilled to a depth of 25.0m begl.
- 1 No. foundation inspection pit (HP01) was excavated to a depth of 1.3m begl.

3.7 Ground Model

Surfacing

The site was surfaced by black and grey concrete in HP01 and WS02 to a depth of 0.1m begl, sandstone flags surfaced CP01, WS01 and WS03 to depths of between 0.05m and 0.1m begl.

Made Ground

Made Ground was encountered in all exploratory hole locations to depths of between 1.0m and 1.45m begl and comprised the following populations:

1. Grey ashy brown GRAVEL of limestone (subbase) in HP01, WS02 and WS04 between the depths of 0.1m and 0.2m begl.

2. *Dark brown/black slightly clayey gravelly SAND with occasional pockets of clay and minor constituents of sandstone, brick and mudstone in WS01, WS02, WS03, WS04, HP01 and CP01 between from depths of between 0.05m and 0.45m begl to depths of between 0.9m and 1.45m begl.*

Superficial Deposits

Superficial deposits were encountered in all exploratory hole locations and generally confirmed published geological records of Glaciofluvial deposits. Four main natural stratification was encountered during the investigation undertaken by NX Consulting as outlined below:

1. *Medium dense dark brown slightly clayey fine to coarse SAND and GRAVEL in HP01, CP01, WS01 to WS04 from depths of between 0.9m and 2.5m begl to depths of between 1.1m and 15.0m begl.*
2. *Medium dense brown/grey fine clayey Sand/sandy SILT in CP01 between 15.0m and 25.45m begl.*

Bands of firm to stiff slightly gravelly slightly sandy slightly silty CLAY were encountered in CP01 between 5.0m and 5.45m begl and 10.4m and 11.0m begl. Firm gravelly CLAY was also recorded in WS03 between 1.1m and 1.9m begl.

Soft to firm CLAY with pockets of Sand was encountered in WS02 between 3.55m and 5.0m begl.

Bedrock

Bedrock was not encountered during the Ground Investigation.

Groundwater

Groundwater was observed in the granular deposits of CP01 at 5.8m begl, WS01 at 3.0m begl rising to 2.53m begl after drilling and 5.0m begl in WS02.

Watching Brief

Ash was recorded as a minor constituent in the Made Ground in WS03 between the depths of 0.05m and 0.25m begl and in WS04 between the depths of 0.2m and 1.05m begl.

Excavation Stability

Collapse was noted in WS03 between 4.0m and 5.0m begl in the natural granular Sand deposits.

3.8 Geo-Environmental Testing

Nine samples of the Made Ground and underlying natural strata were tested for a suite of heavy metals and PAHs, four of the Made Ground samples were also tested for asbestos and speciated hydrocarbons and the results compared against commercial screening values.

No elevated concentrations were recorded against commercial screening values in any of the samples tested and no asbestos was detected in any of the four samples screened through laboratory testing. Commercial screening values were used due to the bottom floor being commercial land use and no soft landscaping proposed.

When compared to residential without plant uptake screening values, there is one elevated concentration in WS01 at 0.5m begl for arsenic and lead in the extreme north of the site which were recorded at one to two times the screening value.

3.9 Gas Monitoring

Two gas monitoring installations were installed as part of the investigation. A total of six gas monitoring visits were carried out between the dates of 14 August 2024 and 19 September 2024.

During the monitoring period, low concentrations of methane (CH₄) has been recorded in the standpipes at 0.2%v/v. Detectable levels of carbon dioxide (CO₂) were recorded in the standpipes, up to a maximum level of 9.0%v/v with associated depleted oxygen concentrations of minimum 7.9%v/v.

No flow rates were recorded during the monitoring.

Due to carbon dioxide concentrations of above 5%v/v being recorded in WS01 during the monitoring period, the site has been classified as CS2 and based on the development being Building Type C, 2.5 points of protection will be required.

A full reinforced gas proof membrane installed to BS 8485:2015 and validated to CIRIA 735, and passively vented underfloor sub-space was recommended.

Additional gas monitoring has been undertaken by Groundtech to confirm the risk, only two wells were installed by NXC which were outside the proposed development footprint.

3.10 Outline Remedial Strategy

Site soils will need to be placed below a suitable clean cover layer to ensure they pose no unacceptable risk to the future site users. Given the nature of the contamination the most cost effective remedial solution is likely to comprise a 600mm capping layer.

Within areas of proposed landscaping it is recommended that either additional testing is carried out or a minimum of 600mm of Made Ground (below proposed formation level), should be removed from site and replaced with clean inert materials to form a capping layer over any potential contamination.

Further intrusive works and contamination testing were recommended once the building is demolished to confirm this conceptual model.

3.11 Geotechnical Summary

Piled foundations are likely to be the most suitable for the proposed development due to significant proposed loadings and risk of differential settlement.

The Clay beneath the site was classified as low to medium volume change potential.

Suspended floor slabs are likely to be required for the proposed development due to the depth of Made Ground. This is compatible with pile foundations.

A worst-case Design Sulphate Class of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) class of AC-1 should be adopted.

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
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 between the dates of Monday 17th November and Friday 21st November 2025:

- 6 No. windowless sampling boreholes (WS01 to WS06) were drilled to depths of between 1.7m and 3.0m begl using a window sampling rig.
- 2 No. cable percussive boreholes (CP01 and CP02) drilled to depths of 25.0m begl using cable percussive drilling.
- 5 No. foundation hand pits (HP01 to HP05) were dug to depths of 1.2m begl using hand digging equipment.

The exploratory hole locations are presented on Groundtech Plan GRO-25277-P02 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 WS06, CP01, CP02	Area of previous buildings on site/former garage
HP04, HP05	Determine geometrics of existing foundations of building to be retained
HP01 to HP03	Determine geometrics of foundations of adj commercial building to the east

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'

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>16</i>
<i>Disturbed Sample</i>	<i>48</i>
<i>Bulk Sample</i>	<i>6</i>
<i>Undisturbed U100 Sample</i>	<i>2</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, sulphate and pH</i>	<i>Soil</i>	<i>6</i>
<i>Total Petroleum Hydrocarbons inc BTEX (TPH CWG)</i>	<i>Soil</i>	<i>3</i>
<i>Speciated Polycyclic Aromatic Hydrocarbons (PAHs)</i>	<i>Soil</i>	<i>6</i>
<i>Asbestos Screening</i>	<i>Soil</i>	<i>6</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 3</i>	<i>pH Value</i>	<i>5</i>
<i>Part 3</i>	<i>Water Soluble Sulphate Content</i>	<i>5</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	Response Zone (m bgl)	Targeted Strata	Reason
CP01	5.00	1.00 – 5.00	Natural Gravel	Ground Gas
CP02	5.00	1.00 – 5.00	Natural Sand and Gravel	Ground Gas
WS01	3.00	1.00 – 3.00	Natural Sand	Ground Gas
WS02	1.90	1.00 – 1.90	Natural Sand	Ground Gas
WS03	1.90	1.00 – 1.90	Natural Sand	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 (CH₄) 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.

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

5.0 GROUND MODEL

5.1 Made Ground

Surfacing

At the time of the Ground Investigation, the site was entirely surfaced by demolition rubble from the demolition of the previous building on site. The demolition rubble comprised the Made Ground population described below.

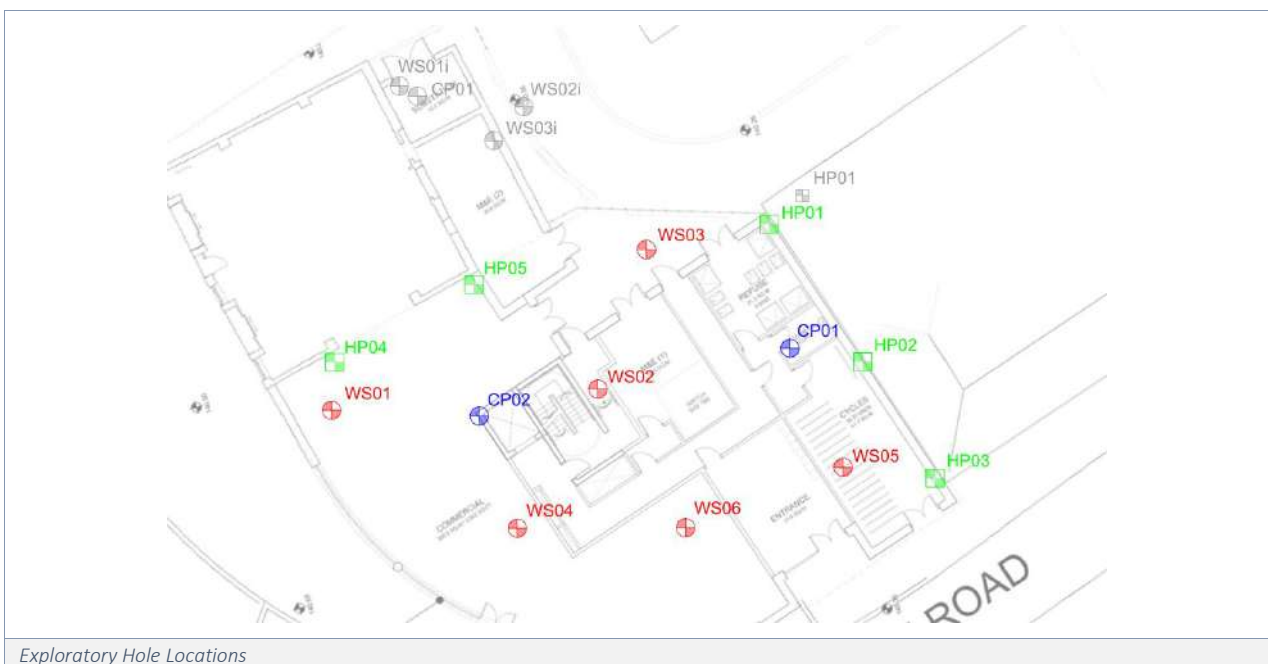
The existing building present in the north is to be retained and was not investigated.

Made Ground

Made Ground was encountered in all exploratory hole locations to between 0.4m and 1.5m begl.

Shallower Made Ground was encountered in the south of the site in WS05 and WS06 to depths of 0.4m and 0.45m begl respectively, becoming increasingly thicker towards the north of the site where the deepest Made Ground of 1.5m begl was recorded in WS03.

The Made Ground comprised entirely of one population of black gravelly fine to coarse SAND with minor constituents of brick and concrete with a low cobble content of brick. The same Made Ground population was recorded in the previous Ground Investigation carried out by NX Consulting to a depth of between 1.0m and 1.45m begl.



5.2 Natural Ground

The natural strata encountered generally confirmed the published geological records and the findings of the previous Ground Investigation of Glaciofluvial deposits. Two main natural stratification encountered during the investigation and are described below:

1. *Medium dense to dense brown slightly gravelly fine to coarse SAND / sandy GRAVEL with constituents of siltstone in all exploratory hole locations from depths of between 0.8m and 1.8m begl to depths of between 19.0m and 23.0m begl.*
2. *Firm brown sandy CLAY in CP01 and CP02 from depths of between 23.0m and 23.5m begl to a depth of 25.0m begl.*

Thin bands of Clay were encountered in CP01 between 11.3m and 11.6m begl and in CP02 between 10.5m and 10.8m begl.

5.3 Bedrock

Bedrock was not encountered during the investigation.

5.4 Groundwater

Groundwater seepages were encountered in WS01, CP01 and CP02 between the depths of 2.45m and 23.0m begl as outlined in the table below:

Borehole ID	Depth of Groundwater (m begl)	Strike/Seepage	Strata
WS01	2.45	<i>Perched seepage</i>	<i>Gravelly Sand</i>
CP01	3.50	<i>Seepage</i>	<i>Sandy Gravel</i>
CP01	9.00	<i>Seepage</i>	<i>Sandy Gravel</i>
CP02	5.00	<i>Seepage</i>	<i>Sandy Gravel</i>

In the previous Ground Investigation, groundwater strikes were encountered in WS01 at 3.0m, WS02 at 5.0m and CP01 at 5.8m begl.

5.5 Watching Brief

A watching brief was maintained during the Ground Investigation for visual and olfactory evidence of contamination.

Clinker was recorded as a minor constituent in the Made Ground in all boreholes and is considered to be associated with the demolition of the previous building on site. Ash was recorded as a common minor constituent in the previous investigation.

No other visual or olfactory evidence of contamination was noted during the Ground Investigation.

5.6 Excavation Stability

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

Collapse was noted during the previous investigation undertaken by NX Consulting between 4.0m and 5.0m begl in WS03 in the north of the site.

5.7 Excavation Progress

SPT refusals were recorded in WS01 to WS06 between 1.7m and 3.0m begl in the dense Gravel deposits resulting in termination of the holes.

6.0 GROUND ENGINEERING

6.1 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, the ground model has evolved from the information obtained by the previous work undertaken by NX Consulting.

Background

At the time of the Ground Investigation, the previous building occupying the majority of the site had been demolished apart from the three-storey brick built building is still standing in the north of the site which is to be retained. The site had most recently been utilised as a set of commercial units however historically has also been labelled as a garage. The existing northern building is indicated to contain a basement, with access to the basement being visible via a stairwell to the east of the building. This building is to remain as part of the development. The existing basement is indicated to be circa 3.0m deep.

The proposed development is for the construction of a new six storey structure comprising commercial units on the ground floor with five floors of residential flats above adjoining onto the existing brick built building in the north of site. A bike store will also be included in the development in the south east of site along with an enclosed courtyard in the north east. The proposed building is indicated to be constructed immediately adjacent to the existing buildings adjoining site.

Ground Conditions

Made Ground was encountered across the site to depths of between 0.4m and 1.5m begl and consisted of dark brown black gravelly fine to coarse Sand with minor constituents of brick, concrete and clinker with low cobble content of brick. The Made Ground was encountered deeper in the north of the site (WS03) and generally becoming less thick towards the south of the site (WS05 and WS06).

Superficial deposits generally comprising medium dense to dense brown gravelly Sand/sandy Gravel were encountered in all exploratory hole locations from depths of between 0.4m and 1.5m begl to depths of between 23.0m and 23.5m begl. In CP01 and CP02, firm sandy Clay was encountered from depths of between 23.0m and 23.5m begl to a maximum depth of 25.0m begl where the boreholes were terminated.

Bedrock was not encountered during the Ground Investigation.

A perched groundwater seepage was encountered in WS01 at 2.45m begl, seepages were recorded in CP01 and CP02 at between 3.5m and 9.0m begl. The groundwater was recorded in the natural granular deposits.

Limitations

The proposed development will be adjoining onto the adjacent buildings and existing building in the northern area of the site, consideration into the existing foundations should be considered during the development to ensure they are not undermined or surcharged. The use of movement joints will be necessary to ensure that differential settlement does not occur.

The existing basement is indicated to be 3.0m deep to FFL, it is indicated that the basement is to be retained as part of the development.

The site is small in area and the proposed development will cover the entire site footprint, therefore there will be limited space for any excess material or excavated material. Appropriate good materials management will have to be in practice throughout the enabling and construction works.

Substructure may still be present beneath the site associated with the former building which has recently been demolished. During the enabling works, all existing substructure associated with the previous development should be grubbed up and removed from site.

Proximity to adjacent properties and Metrolink station should be considered during the development.

A fault is also indicated to run through site. Foundations within 25m of the fault should be appropriately reinforced.

High loadings are anticipated as part of the proposed development which may preclude the use of shallow foundation types. The proposed building is indicated to be of masonry construction.

The Mining Remediation Authority report conducted by NX Consulting resulted in the site being at low risk from the legacy of historic coal mine workings.

6.2 Existing Foundations

Five hand dug foundation inspection pits were excavated along the existing building on the site (HP04 and HP05) and also along the building to the east of the site (HP01 to HP03) in order to determine the existing foundations. The foundation drawings are provided on GRO-25277-P04 A to E.

In HP01, which was excavated on the north western corner of the adjacent building to the east, a concrete foundation was encountered at 0.4m begl stepping out by 0.5m and measuring 0.1m thick. The base of the foundation was recorded at m begl.

HP02 was undertaken in the centre of the wall on the eastern boundary of the site and also recorded a concrete foundation at 0.6m begl, stepping out 0.05m and measuring 0.4m thick. The base of the foundation was 1.0m deep from existing level.

HP03 was excavated on the south western corner of the adjacent building and encountered a concrete foundation at 0.8m begl, stepping out by 0.115m begl and measuring 0.1m thick. Base of foundation was identified at 0.9m begl.

The foundations encountered indicates that the adjoining building was constructed on a shallow strip/pad foundation solution.

No foundations were encountered in HP04 and HP05 which were excavated along the southern wall of the existing building on site which is to remain as part of the development, a brick wall was encountered to a depth of 1.2m begl as shown on GRO-25277-P04D/E. It is assumed that no foundations were encountered due to the basement of the building meaning that the foundations were below the level of the hand excavated pits at 1.2m begl.

6.3 Geotechnical Parameters

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

Characterization 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 have been selected based on correlation with in-situ testing using empirical rules.

Stratum	Parameter	Selected Characteristic Value
<i>Medium dense Sand</i>	<i>Drained angle of friction (ϕ')</i>	<i>30°</i>
<i>Medium dense Gravel</i>	<i>Drained angle of friction (ϕ')</i>	<i>32°</i>
<i>Dense Gravel</i>	<i>Drained angle of friction (ϕ')</i>	<i>34°</i>
<i>Firm sandy Clay</i>	<i>Undrained Shear Strength</i>	<i>90kPa</i>

6.4 Preliminary Foundation Design

The below recommendations are based on existing levels at the time of the investigation.

6.4.1 Shallow Foundations

Due to the anticipated high loadings of the proposed development associated with the six storey development, traditional shallow foundations may not be a suitable option for the site.

If shallow foundations are the chosen solution, preliminary foundation design has been undertaken by calculation and a safe Allowable Bearing Pressure (ABP) of 250kN/m² for ultimate limit state design has been calculated for a pad or strip foundation constructed in the medium dense granular deposits.

Using the above pressures, settlement criteria of 25mm will not be exceeded and Serviceability Limit State conditions will be satisfied. The material is granular in nature and settlement will be immediate. The settlement calculations have been undertaken for a 0.6m wide strip, when the dimensions of the foundations are confirmed, the explicit settlement calculations should be reassessed as the depth of influence will change. Movement joints should be utilised as part of the development for the adjacent buildings on and offsite.

Foundations should be suitably reinforced within 25m of the fault.

Groundwater has been encountered at a minimum depth of 2.45m bgl and is not anticipated in foundation excavations, perched water may be present.

Due to the shallow natural material being granular in nature, instability of shallow excavations is a possibility. Collapse was noted during the previous investigation undertaken by NX Consulting between 4.0m and 5.0m bgl in WS03 in the north of the site.

If shallow foundations are selected, the foundations should be deepened to ensure that the angle of influence does not impose additional loading on the existing foundations and basement.

6.4.2 Pile Foundations

It is anticipated that pile foundations will be the preferred foundation type due to the high anticipated loadings associated with the six storey building.

The pile type should be suitable to allow hard driving to allow for the dense Sand and Gravel, alternatively CFA piles may be more cost effective and would provide more confidence in achieving the design depth and reducing vibration with respect to adjacent structures.

The piles will transfer loads through all Made Ground. At this stage loadings are not available, pile caps and reinforced ring beam should be constructed to span between piles and support loadings from walls. Movement joints will be required with respect to the adjoining buildings.

Design by Calculation

Preliminary design by calculation has been carried out using due skill and care using the global factor of safety method. EC7 compliant calculations can be undertaken using partial factors when the permanent and variable loads are available.

The preliminary design by calculation is based on the following ground model from CP01:

- | | | |
|--------------------------------|---|-------|
| • Made Ground | - | 0.8m |
| • Medium dense Gravel | - | 11.3m |
| • Firm sandy Clay | - | 11.6m |
| • Medium dense to dense Gravel | - | 23.5m |
| • Firm brown sandy Clay | - | 20.0m |

A summary of the allowable loadings is provided below:

Pile Width (mm)	Pile Depth (m begl)	Allowable Load (kN)
225	10	125
225	15	225
300	10	200

The above should be considered when the loadings are confirmed. The risk from vibration to nearby properties including tram station and existing building in northern end of site should be considered when selecting the type of pile and the installation method. There are options to reduce the vibration if required, such as bottom driven or small diameter steel piles and this should be discussed with a piling contractor. Alternatively, Continuous Flight Auger (CFA) piles could be installed which is a low vibration installation method.

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

The foundations of the existing building should be considered during the design process and ensure that they will not be in the zone of influence of the new foundations.

Design Validation

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

Due to the number of storeys proposed and anticipated loads, static load testing is likely to be required by the warranty provider to validate the design by calculation.

The piling works should be carried out in accordance with Execution Standard BS EN 12699:2015 'Execution of special geotechnical works. Displacement piles'. If driven piles are the preferred installation method, they will be driven to set using pile driving formulae in accordance with Eurocode 7. The piling works should be carried out in accordance with Execution Standard EN 1536 for Bored Piles if CFA piles are preferred.

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

Foundation excavations will not encounter cohesive strata within the influence of trees therefore heave precautions are not required.

6.6 Floor Slabs

Due to the depth of Made Ground encountered across the site generally being greater than 600mm, a suspended floor slab is recommended for the proposed development. A suspended floor slab is also suitable for piled foundations.

6.7 Construction

The boreholes indicate that instability of excavations may occur due to the granular nature of the shallow deposits. Collapse was noted in the previous investigation undertaken by NX Consulting between 4.0m and 5.0m begl in WS03. 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 associated with the previous building on site and substructure that may be present beneath the site.

Shallow groundwater was generally not encountered during the Ground Investigation with the exception of WS01 which encountered a groundwater seepage at 2.45m begl. Therefore, groundwater is unlikely to be encountered during foundation excavations, however may be present in deeper drainage runs.

6.8 Concrete Classification

Made Ground

Water soluble sulphate testing was undertaken on six samples of the Made Ground. The range of soluble sulphate (SO₄) recorded is 88.3mg/l to 313mg/l. Associated pH values ranged between 4.71 and 7.67 indicating slightly acidic to neutral conditions.

For a dataset containing five to nine results, the mean of the highest two soluble sulphate values is taken as the characteristic value along with the mean of the lowest two pH results. For the Made Ground, the characteristic soluble sulphate value is 282.25mg/l and the associated pH value is 5.18.

Natural Strata

Water soluble sulphate testing was undertaken on five samples of the natural strata. The range of soluble sulphate (SO₄) recorded is 35.3mg/l to 82.8mg/l. Associated pH values ranged between 4.8 and 7.3 indicating slightly acid to neutral conditions.

For a dataset containing five to nine results, the mean of the highest two soluble sulphate values is taken as the characteristic value along with the mean of the lowest two pH results. For the Made Ground, the characteristic soluble sulphate value is 79.5mg/l and the associated pH value is 5.01.

Due to the granular deposits encountered beneath the site, the groundwater regime is considered to be mobile.

The results of laboratory pH and sulphate content indicate that ACEC Class AC-1 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.

Concrete classification testing undertaken during the previous investigation also concluded that DS-1 and AC-1 conditions prevail.

6.9 Highway Design

CBR values of greater than 5% are likely to be achieved in undisturbed natural 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. Some reengineering of the subgrade is required prior to highway construction to achieve the required design CBR value.

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 Drainage System (SuDS)

The use of SuDS drainage is not indicated to be feasible due to the small area of site and limited space for an attenuation tank system.

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 mixed residential and commercial development comprising the construction of a six storey structure with commercial units on the ground floor and apartments above adjoining onto an existing building in the north of the site. 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
Granular Made Ground/Formal Garage Building	6	WS01 to WS06

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

Contaminant	Range (mg/kg)	Metals		
		Screening value (mg/kg)	Exceedances	Locations
Arsenic	16.1 – 143.5	40	4	WS01 0.1 WS02 0.2 WS04 0.2 WS06 0.2
Cadmium	0.3	85	0	-
Chromium	24.8 – 43.8	910	0	-
Hexavalent Chromium	0.3	21	0	-
Copper	48 – 221	7100	0	-
Lead	94 – 785	310	4	WS01 0.1 WS02 0.2

				WS04 0.2 WS06 0.2
Mercury	0.3 – 3.2	1.2	3	WS02 0.2 WS04 0.2 WS06 0.2
Nickel	17.6 – 45.7	180	0	-
Selenium	1 – 2	430	0	-
Zinc	30 – 948	40000	0	-
Polycyclic Aromatic Hydrocarbons (PAHs)				
Contaminant	Range (mg/kg)	Screening value (mg/kg)	Exceedances	Locations
Naphthalene	0.04 – 160.27	15	2	WS01 0.1 WS02 0.2
Acenaphthylene	0.03 – 0.71	2900	0	-
Acenaphthene	0.05 – 115.06	3000	0	-
Fluorene	0.04 – 82.42	2800	0	-
Phenanthrene	0.05 – 464.01	1300	0	-
Anthracene	0.04 – 118.3	31000	0	-
Fluoranthene	0.06 – 432.02	1500	0	-
Pyrene	0.06 – 336.83	3700	0	-
Benzo(a)anthracene	0.06 – 183.88	11	2	WS01 0.1 WS02 0.2
Chrysene	0.05 – 190.23	30	2	WS01 0.1 WS02 0.2
Benzo(b)fluoranthene	0.05 – 179.82	3.9	4	WS01 0.1 WS02 0.2 WS04 0.2 WS06 0.2
Benzo(k)fluoranthene	0.02 – 69.93	110	0	-
Benzo(a)pyrene	0.04 – 164.86	3.2	4	WS01 0.1 WS02 0.2 WS04 0.2 WS06 0.2
Indeno(123cd)pyrene	0.04 – 89.08	45	1	WS01 at 0.1
Dibenzo(ah)anthracene	0.04 – 18.67	0.31	4	WS01 0.1 WS02 0.2 WS04 0.2 WS06 0.2
Benzo(ghi)perylene	0.04 – 76.92	360	0	-
TPH CWG - Aliphatics				
Contaminant	Range (mg/kg)	Screening value (mg/kg)	Exceedances	Locations
>C5-C6	<0.10	42	0	-
>C6-C8	<0.10	100	0	-
>C8-C10	<0.10	27	0	-
>C10-C12	<0.20 – 12.7	130	0	-
>C12-C16	6 – 39	1100	0	-
>C16-C21	<7 – 68	65000	0	-
>C21-C35	<7.00 – 224	65000	0	-

Total aliphatics C5-35	<19.00 – 344		0	-
TPH CWG - Aromatics				
Contaminant	Range (mg/)	Screening value (mg/kg)	Exceedances	Locations
>C5-EC7	<0.10	370	0	-
>EC7-EC8	<0.10	860	0	-
>EC8-EC10	<0.10	47	0	-
>EC10-EC12	<0.20	250	0	-
>EC12-EC16	<4.00	1800	0	-
>EC16-EC21	<7.00	1900	0	-
>EC21-EC35	<7.00	1900	0	-
Total aromatics C5-35	<19.00			-
Total aliphatics and aromatics(C5-35)	<38.00			-
MTBE	<5.00 ug/kg	49000	0	-
Benzene	<5.00 ug/kg	380	0	-
Toluene	<5.00 ug/kg	880000	0	-
Ethylbenzene	<5.00 - 20 ug/kg	83000	0	-
m/p-Xylene	<5.00 - 34 ug/kg	79000	0	-
o-Xylene	<5.00 - 39 ug/kg	88000	0	-
Others				
Organic Matter	11.3 – 33.4%			
Asbestos Screen				
Position	Depth (m bgl)	Result	Quantification	
WS01	0.10	None Detected	n/a	
WS02	0.20	None Detected	n/a	
WS03	0.30	None Detected	n/a	
WS04	0.20	None Detected	n/a	
WS05	0.20	None Detected	n/a	
WS06	0.20	None Detected	n/a	

7.2 Generic Quantitative Risk Assessment - Soils

Made Ground was encountered beneath the entire site to depths of between 0.4m and 1.5m begl and comprised dark brown black gravelly fine to coarse sand with minor constituents of brick, concrete and clinker with low cobble content of brick. The same Made Ground population was recorded in the NX Consulting investigation to a maximum depth of between 1.0m and 1.45m begl.

The has recently been occupied as commercial units however historical maps indicate that the building was utilised as a garage sometime between 1985/89 and 2003.

Metals

Elevated concentrations of arsenic and lead have been recorded in the granular Made Ground of WS01, WS02, WS04 and WS06 as shown on Contamination Plan GRO-25277-P05. The concentrations are generally elevated between one and two times the screening values of 40mg/kg for arsenic and 310mg/kg for lead, this is with the exception of WS04 at 0.2m for arsenic and WS06 at 0.2m for lead which recorded a concentrations three to four times the respective screening values.

Elevated levels of mercury have also been recorded in WS02, WS04 and WS06 in the same granular Made Ground population, at between one and three times the screening value.

The elevated concentrations are likely associated with the sites former usage as garage and resultant minor constituents in the Made Ground from the demolition of the previous building on site. The garage processes may have included servicing.

In the previous investigation, elevated arsenic and lead have been recorded in WS01 at 0.5m begl in the extreme north of the site. These elevations were recorded at one to two times the residential without plant screening values.

Polycyclic Aromatic Hydrocarbons (PAHs)

Elevated concentrations of Benzo(b)fluoranthene, Benzo(a)pyrene, Dibenzo(ah)anthracene were recorded in the granular Made Ground of WS01, WS02, WS04 and WS06. Concentrations above the residential without plant uptake screening values for Naphthalene, Benzo(a)anthracene and Chrysene were also recorded in WS01 and WS02 along with a single elevation in Indeno(123cd)pyrene in WS01. The concentrations were generally recorded up to five times the screening values apart from WS01 which recorded concentrations between 10 to 50 times the screening values. The location of the elevated PAHs are displayed on *GRO-25277-P05*.

The vapour saturation limit for naphthalene has been exceeding in WS01 and WS02 with concentrations recorded at 160.27mg/kg in WS01 and 15.14mg/kg compared to a vapour saturation limit of 15mg/kg.

The source of the elevated concentrations is likely associated with the clinker recorded as a minor constituent in the Made Ground. In WS01, a significant amount of clinker was recorded as a minor constituent.

No elevated concentrations were recorded in the previous Ground Investigation when results compared with residential without plant uptake screening values, however ash was noted during the investigation.

Total Petroleum Hydrocarbons (TPH CWG), BTEX and MTBE

Speciated hydrocarbon testing was carried out on three samples during the Ground Investigation due to the sites past use as a garage. No visual or olfactory evidence of volatile contamination was recorded during the Ground Investigation, testing was conducted to obtain site coverage. No evidence of inspection pits was identified during the investigation.

No elevated concentrations of aliphatic or aromatic hydrocarbons have been recorded by the laboratory testing and all volatile range hydrocarbons have been recorded below laboratory detection limits. All BTEX and MTBE were also recorded below the screening values.

No elevated concentrations of fuel derived hydrocarbons were recorded in the previous Ground Investigation.

7.3 Permanent Ground Gases

Four ground gas monitoring visits have been carried out between 26th November 2025 and 19th January 2026.

No concentrations of methane have been recorded during the monitoring visits. Carbon Dioxide (CO₂) was detected in the standpipes between concentrations of 2.5%v/v and 10.3%v/v with associated depleted oxygen concentrations of minimum 5.3%v/v. The steady state values of carbon dioxide and oxygen were generally consistent with peak levels.

No positive gas flow rates were recorded during the monitoring visits.

The atmospheric pressure ranged between 976 and 999mb and the monitoring was carried out during periods of steady, falling and rising barometric pressure.

Groundwater was encountered in all boreholes during the monitoring period between 0.81m and 4.0m bgl and was occasionally recorded above the response zones. The groundwater encountered above the response zone is likely perched water ingress.

Characterisation of the Gas Screening Value

Based upon 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.

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

For this final assessment, the maximum recorded concentration of carbon dioxide of 10.3%v/v has been used, the gas flow rate of 0.1l/hr has been adopted to calculate the GSV.

$$\text{Carbon Dioxide GSV} = 0.103 (10.3\%) \times 0.1 = 0.013 \text{ l/hr}$$

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 for mixed commercial and residential end use, the Wilson and Card method has been used to carry out the assessment.

The GSVs for methane and carbon dioxide are below the assessment GSV of 0.7l/hr and generally below the typical maximum concentration assessment criteria, the site falls within Characteristic Situation 1. However, concentrations of carbon dioxide above the respective typical maximum concentration of 5%v/v have been recorded in three of the five wells during this supplementary investigation.

The monitoring undertaken previously by NX Consulting also classified the site as CS2 and recommended gas protection measures to be installed, due to high carbon dioxide concentrations of up to 9.0%v/v.

Characteristic Situation 2

An extract of the Modified Wilson and Card table is presented below:

Characteristic Situation (Wilson and Card)	Methane		Carbon Dioxide	
	Wilson and Card		Wilson and Card	
	Gas Screening Value (l/hr)	Typical Maximum Concentration (%v/v)	Gas Screening Value (l/hr)	Typical Maximum Concentration (%v/v)
1	<0.07	<1	<0.07	<5
2	<0.7	Borehole flow rate not greater than 70l/hr	<0.7	Borehole flow rate not greater than 70l/hr
3	<3.5		<3.5	
4	<15	Quantitative Risk Assessment Required	<15	Quantitative Risk Assessment Required
5	<70		<70	
6	>70		>70	

The proposed commercial and residential development is classified as a Building Type B in accordance with BS 8485:2019 and the site is designated as CS2, therefore 3.5 points of protection are required for the proposed development.

The 3.5 points can be achieved by a combination of two or more of the following three types of protection measures to achieve that score:

Protection Measure	Details	Points of Protection
Structural Barrier/Floor Slab	Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetration	1.5
Ventilation Protection Measures	Passive sub floor dispersal layer of good performance	1.5
Gas resistant Membrane	Gas resistant membrane (including methane) meeting the criteria outlined in Table 7 of BS 8485:2020	2.0

The existing building in the northern area of site is to be refurbished, it is recommended that the gas precautions outlined above are also installed in this building.

Validation

It is recommended that the gas protection measures installed within the proposed development are validated by a fully qualified person in accordance with CIRIA C735.

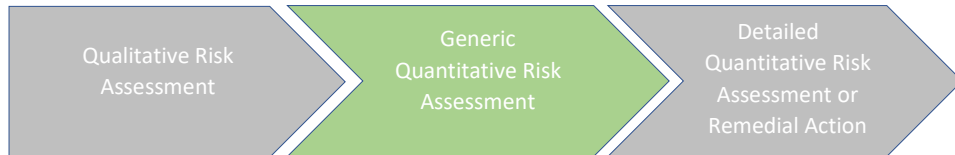
Radon

The site is not in an area requiring radon precautions within the foundations.

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. A revised illustrative CSM is provided on *GRO-25277-P06*. 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 second stage in the land quality risk assessment process - **the Generic Quantitative 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.

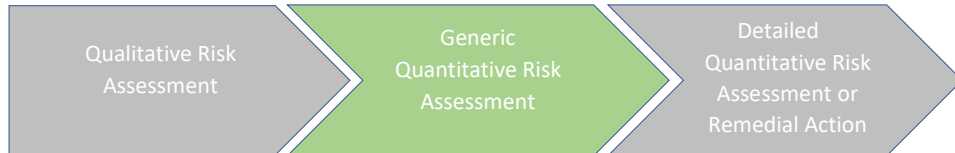
Conceptual Site Model					Generic Quantitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
PL1	Contaminated Soils	Ingestion of soil and dust. Dermal contact with soil.	Low likelihood	Medium	Moderate to Low	Pollution Linkage 1 refers to proposed site users coming into contact with contaminated soils on the site. Historically, the site has been utilised as a garage and most recently as commercial units. Offsite sources of contamination have been identified including a railway, leather works and mills historically present surrounding the site. At the time of the Ground Investigation, the building occupying the majority of the site had been demolished. A building is still present in the north of the site which is to be refurbished and remain as part of the proposed development. Made Ground has been encountered across the site to a maximum depth of between 0.4m and 1.5m bgl and comprised dark brown black gravelly Sand with minor constituents of brick, concrete and clinker with low cobble content of brick.

Conceptual Site Model					Generic Quantitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
						Elevated concentrations of heavy metals and PAHs have been recorded in the granular Made Ground soils beneath the site, above residential without plant uptake screening values based on the site being developed with commercial units on the ground floor with residential apartments above. No asbestos was detected in any of the samples screened through laboratory testing. No impactation has been identified from fuel derived hydrocarbons, likely due to continuous slab and good drainage system. The proposed development will be covered in hardsurfacing which will break the pollution linkage, if soft landscaping is present a minor pollution linkage will exist and remedial measures will be required.
PL2	Contaminated Soils	Inhalation of vapour.	Low likelihood	Medium to Severe	Moderate to Low	Pollution linkage 2 refers to vapours migrating into confined spaces within the proposed development. No visual or olfactory evidence of contamination has been identified during the Ground Investigation and all hydrocarbons have been recorded below the relevant screening values and all volatile range hydrocarbons have been recorded below laboratory detection limits. Elevated concentrations of naphthalene have been recorded in WS01 and WS02 in the north west and centre of site respectively, in the granular Made Ground. Naphthalene is considered to be semi-volatile however the source of the elevated concentrations is

Conceptual Site Model					Generic Quantitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
						considered to be associated with the clinker in the Made Ground and is therefore a solid source, a vapour risk does not exist with respect to naphthalene. Elevated mercury has also been recorded in WS02, WS03 and WS06. Elemental mercury is considered to be a vapour risk above 1.2mg/kg. It is recommended that further testing is carried out to confirm the type of mercury and confirm that there is no vapour risk. Based on the elevated concentrations of mercury, a minor pollution linkage is considered to exist.
PL3	Contaminated Soils	Inhalation of soil dust by adjacent site users.	Unlikely	Medium	Low	No mobile contamination has been encountered onsite and the surrounding area is of similar usage to site. There is considered to be no pollution linkage present.
PL4	Contaminated Soils	Attacking potable water supply pipe.	Low likelihood	Medium	Low to Moderate	This 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 has been recorded beneath the site to a depth of between 0.4m and 1.5m bgl and may be present at installation depth however no organic contamination has been identified on site. Mercury has been recorded and speciated mercury testing is required to determine if element mercury is present.

Conceptual Site Model					Generic Quantitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
						Potable water supply pipes will be included as part of the development and a local water company risk assessment should be carried out prior to construction to confirm the pipe material.
PL5	Ground Gas	Migration and accumulation of ground gas in internal spaces.	Likely	Medium to Severe	Moderate to High	Made Ground has been encountered on site to a maximum depth of between 0.4m and 1.5m begl. The gas monitoring results place the site in CS1 based on the GSV, however, concentrations of carbon dioxide above the typical maximum concentration of 5%v/v have been recorded in three of the five wells and an increase to CS2 is required. The previous gas monitoring carried out by NX Consulting placed the site in CS2 and gas protection measures were recommended to be installed. Ground gas precautions in the form of a gas resistant membrane and good ventilation subfloor void are required. The site is not within an area requiring radon precautions within foundations.

Controlled Waters Pollution Linkage Assessment



- The table below represents the second stage in the land quality risk assessment process – **Generic Quantitative 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					Generic Quantitative Risk Assessment	
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	Rationale
PL6	Contaminated Soils	Impaction of groundwater from soil contamination (diffuse and point). Impaction of groundwater from groundwater plume.	Unlikely	Medium	Low	Made Ground has been encountered beneath the site to a maximum depth of 1.5m begl. The superficial deposits (Glaciofluvial Deposits) are classified as a Secondary A Aquifer. The bedrock geology underlying the site is indicated to be the Old Lawrence Rock and Pennine Lower Coal Measures formation which are classified as a Secondary A Aquifer. The site does not lie within 500m of a Source Protection Zone and there are no active groundwater abstraction points and no potable water abstraction points within 2000m of the site. No significant groundwater body has identified in the superficial aquifer. A thick clay layer has been recorded below the granular superficial deposits and underlying bedrock. Groundwater is not considered to be a sensitive source beneath the site and no mobile contamination has been identified, a plausible pollution linkage is not considered to exist.

Conceptual Site Model					Generic Quantitative Risk Assessment	
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	Rationale
PL7	Contaminated Soils	Migration of soil and groundwater contamination impacting surface waters.	Unlikely	Medium	Low	There are no surface water features within 250m of site. The nearest surface water feature is the Rochdale Canal circa 530m south of the site, which is a closed system and therefore will not be impacted by any potential contamination. Furthermore, no sources of mobile contamination have been identified on site, therefore a pollution linkage is not present.

7.5 Outline Remedial Strategy

Soils

Granular Made Ground consisting of dark brown black gravelly Sand with minor constituents of brick, clinker and concrete with low cobble content of brick was encountered beneath the site to depths of between 0.4m and 1.5m begl.

Elevated concentrations of heavy metals and PAHs have been recorded in the Made Ground beneath the site associated with the minor constituents of clinker in the Made Ground. No asbestos was recorded in any of the samples screened through laboratory testing.

The site is indicated to be completely covered in hardsurfacing and no specific remedial measures are required with respect to contamination soils. If areas of soft landscaping are proposed, a 450mm cover system comprising of a minimum 150mm Topsoil and 300mm Subsoil should be placed to mitigate against the elevated concentrations recorded during the Ground Investigation. Imported soils should be tested to ensure they are suitably clean for the proposed end use and the thickness of the cover system should be validated in accordance with YALPAG and MCC Guidance.

Vapours

Elevated mercury has been recorded in the granular Made Ground of WS02, WS04 and WS06. The screening value for mercury is based on element mercury and inhalation. It is recommended that further testing is carried out to confirm the type of mercury present within the Made Ground, to ensure element mercury and a vapour risk is not present.

The vapour saturation limit for naphthalene has been exceeded in WS01 and WS02 however the source of naphthalene is a solid source (clinker) as a minor constituent in the ground and is not a vapour risk. In addition, a sufficient subfloor ventilation will be provided through the CS2 precautions.

Controlled Waters

No mobile contamination has been identified during the Ground Investigation, a clay layer is present above the bedrock and the nearest surface water is a sufficient distance from site. No remedial measures are required with respect to controlled waters.

Ground Gas

Gas monitoring results place the site in Characterisation Situation 2 (CS2). The ground gas precautions should include at least two of the protection measures in the table below.

Protection Measure	Details	Points of Protection
Structural Barrier/Floor Slab	Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetration	1.5
Ventilation Protection Measures	Passive sub floor dispersal layer of good performance	1.5
Gas resistant Membrane	Gas resistant membrane (including methane) meeting the criteria outlined in Table 7 of BS 8485:2020	2.0

The site falls in an area where no radon precautions are required.

Watching Brief and Regulatory Compliance

A watching brief should be in place during ground works and construction. If previously unidentified contamination is encountered, work should cease in that area and Groundtech Consulting contacted for advice.

Regulatory compliance should be obtained pre-commencement to avoid delays during the construction phase which will have cost implications. It is recommended that a remedial specification is produced to aid the pre-commencement regulatory compliance.

7.6 Asbestos in Soils

Asbestos was not recorded in any of the six Made Ground samples screened during the Groundtech Consulting investigation or the four samples screened during the NX Consulting Ground Investigation in 2024. Based on these results, no asbestos control measures are required.

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	Moderate

Made Ground has been encountered beneath the site and elevated concentrations of heavy metals and PAHs have been recorded by the laboratory testing. The risk to ground workers should be communicated through the 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.

Six 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 9*.

Based on the assessment tool the majority of Made Ground has been classified as *Non-Hazardous* for waste disposal purposes. The Made Ground in WS01 has been classified as *Hazardous* with respect to HP7 (Carcinogenic) and HP11 (Mutagenic) due to high total hydrocarbon concentrations. It is recommended that this material is left undisturbed.

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

Asbestos has not been detected in any of the samples screened therefore will not impact the classification by assessment.

7.9 Waste Acceptance Criteria (WAC) Results

The Landfill Directive (Directive 1999/31/EC on the landfilling of waste) led to the establishment of a methodology for classifying wastes. Wastes can only be accepted at a landfill if they meet the relevant Waste Acceptance Criteria (WAC) for that type of landfill. There are three different WAC, these are for:

- *Inert waste*
- *Non-Hazardous waste*
- *Hazardous waste*

Wastes should first be classified based on their total concentrations as detailed in the previous section. WAC testing is then required if the end disposal route is a landfill.

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 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 this 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

Historically, the site was utilised as a garage and more recently has been occupied by commercial units. The site was made up of two buildings, one three storey building in the north which is to remain as part of the development and a second that has recently been demolished. The proposed development is the construction of a six storey building adjoining onto the existing building on site with commercial space on the ground floor and residential apartments above with associated cycle storage and a private courtyard.

Made Ground comprising gravelly Sand with minor constituents of brick, clinker and concrete with low cobble content of brick has been recorded across the site to a maximum depth of between 0.4m and 1.5m begl.

Elevated concentrations of heavy metals and speciated PAHs have been recorded against residential without plant uptake screening values. No asbestos has been detected in any of the samples screened by the laboratory testing. The site is indicated to be completely covered in hardsurfacing which will break the linkage, however if areas of soft landscaping are proposed, a cover system should be installed to mitigate against the elevated concentrations. The human health risk is *Moderate to Low*.

No sources of mobile contamination have been recorded by the investigation and the controlled waters risk is *Low*.

Ground gas monitoring places the site in CS2 and ground gas protection measures will be required in the proposed development, the ground gas risk is *Moderate to High*. The site is not in an area where radon precautions are required.

Waste classification testing has classified the majority of Made Ground as *Non-Hazardous* for waste disposal. The Made Ground in WS01 has been classed as *Hazardous*. No asbestos fibres were detected and does not affect the classification.

8.2 Ground Engineering

Shallow strip and pad foundations may be a suitable option for the proposed development dependent on proposed loadings. If the loadings are too high, the most suitable foundations are likely be piles founding in the deeper medium dense granular deposits.

Foundations within 25m of the fault should be appropriately reinforced.

A suspended floor slab is compatible with the proposed development and pile foundations.

The results of laboratory pH and sulphate content indicate that ACEC Class AC-1 and sulphate class DS-1 conditions prevail in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005.

The use of SuDS drainage is not indicated to be feasible due to the small area of site and limited space for an attenuation tank system.

The site is not in an area with a historic legacy of shallow coal mining.

Environment Agency information indicates that the site is outside a flood risk zone and is not at risk of flooding.

8.3 Required Further Work

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

Production of Remedial Specification
Speciated mercury testing
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'.
- Land Contamination Risk Management (LCRM), 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”

NHBC Standards 2025.

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

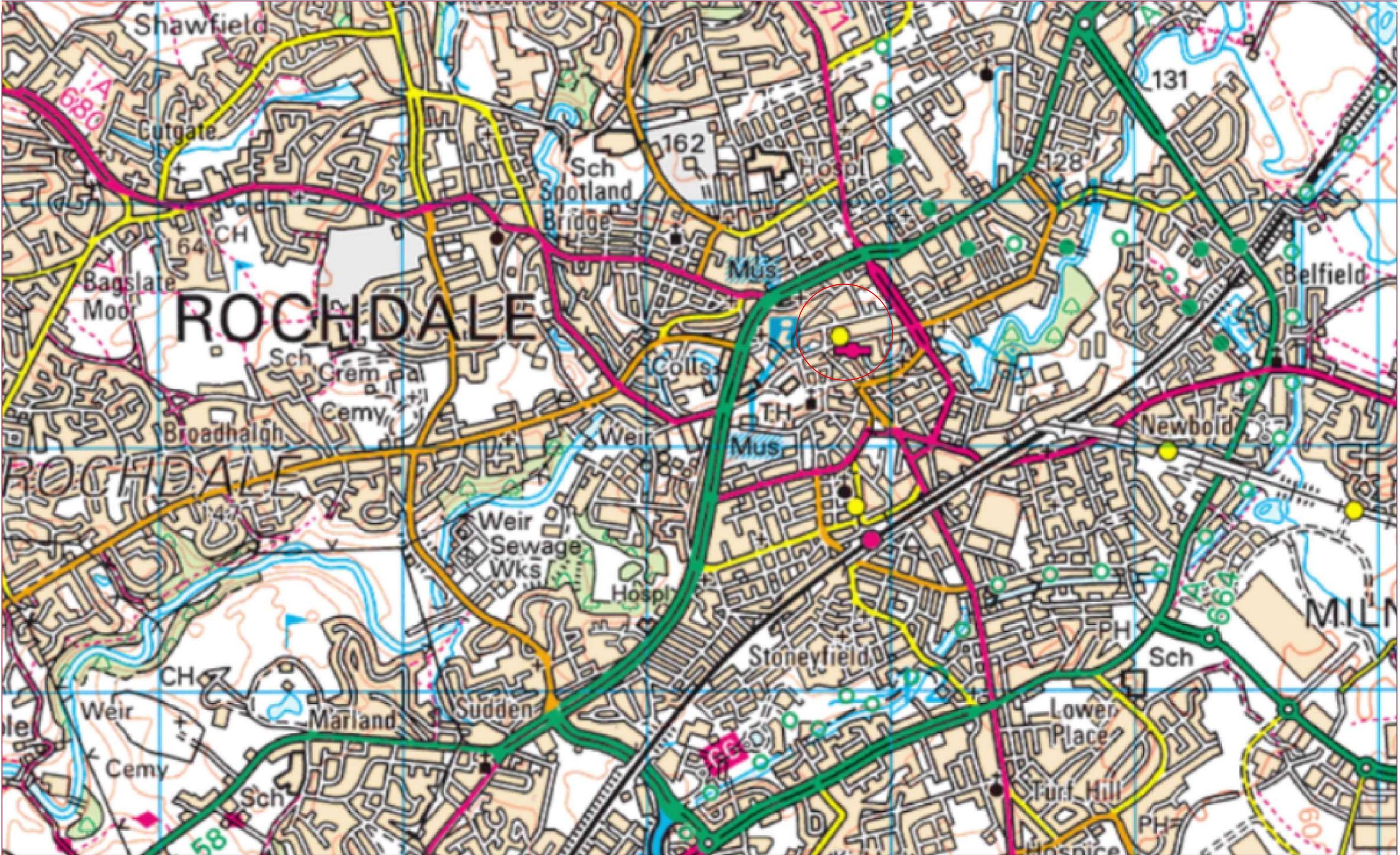
BRE Digest 365 “Soakaway Design” 2016.

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

Environment Agency Technical Guidance Note 01. Hydrogeological Risk Assessment for Landfills.

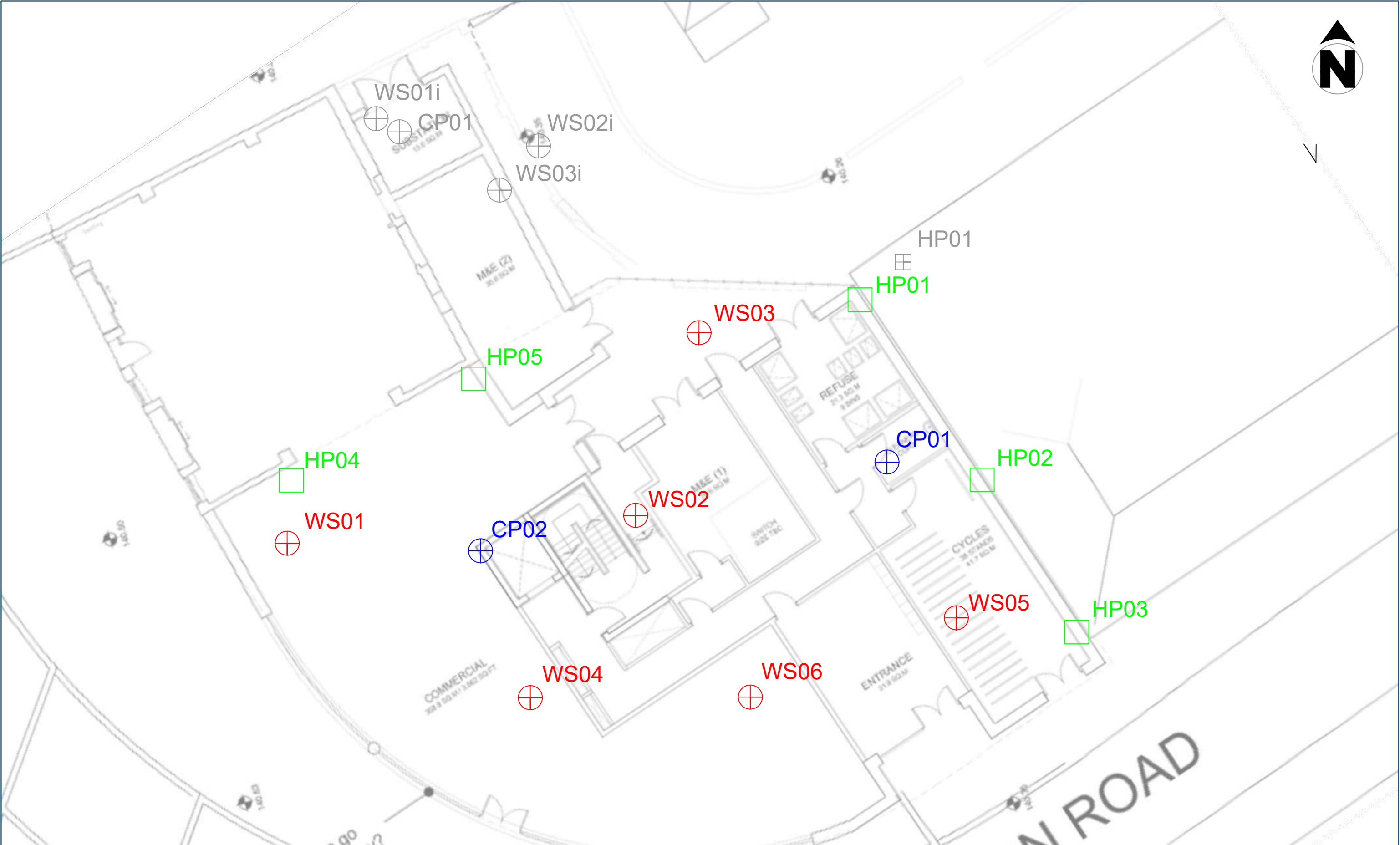
Specification for Highways Works – Series 600 Earthworks November 2016.

APPENDIX 1 - Plans

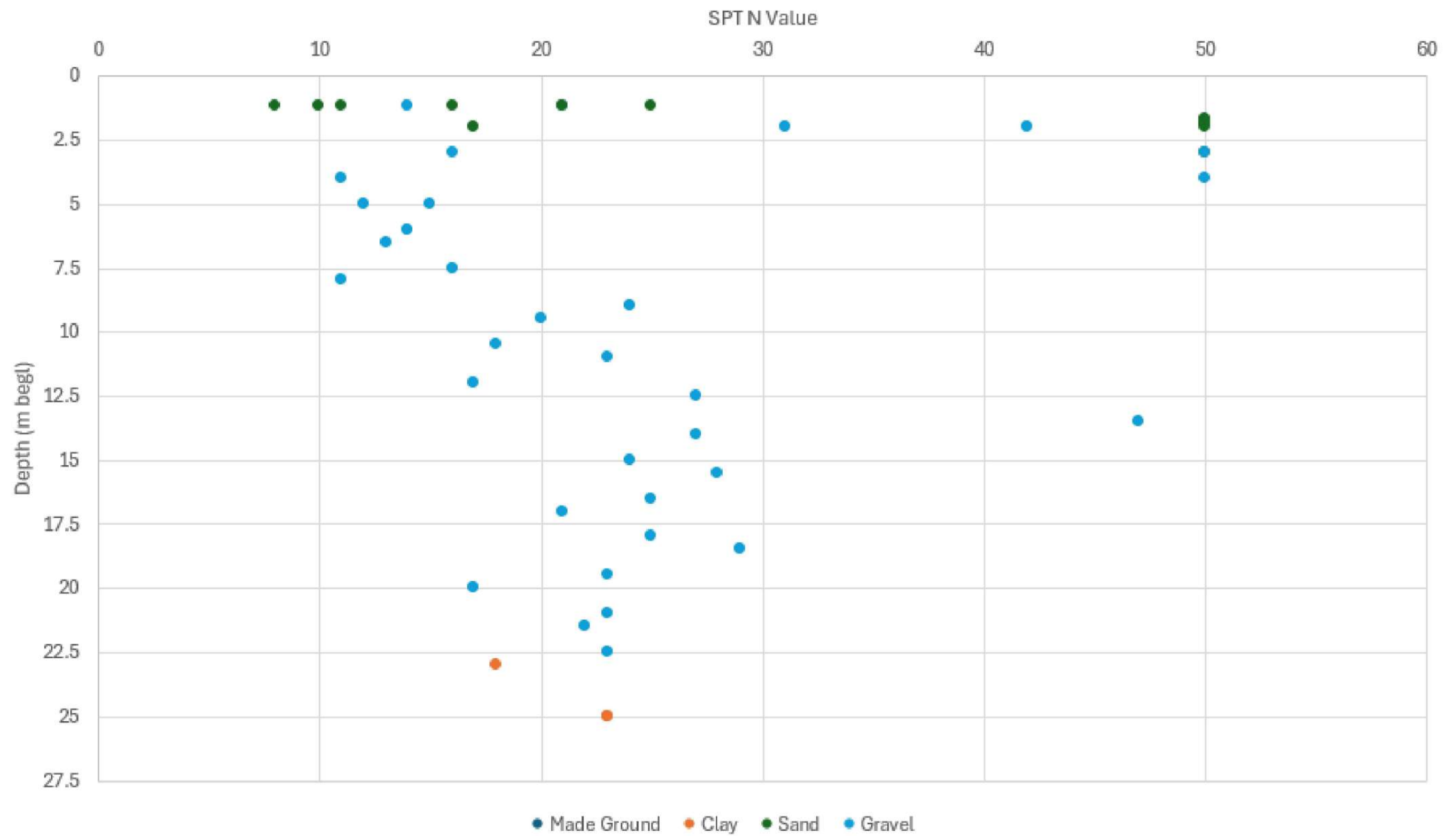


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								Draft		
								Issued		
	PLAN TITLE	PROJECT LOCATION PLAN -	PLAN NUMBER	GRO-25277-P01	Rev.	Details	Date	For Comment		
							Approved			

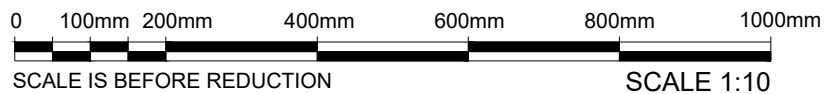
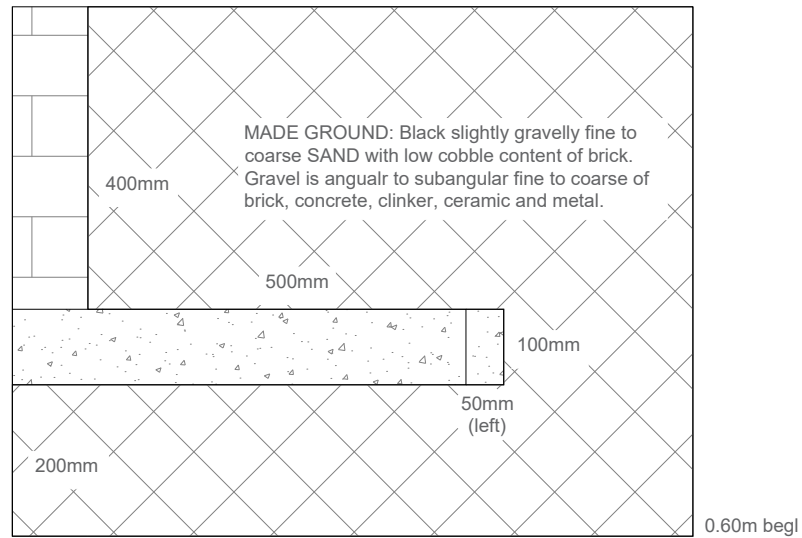




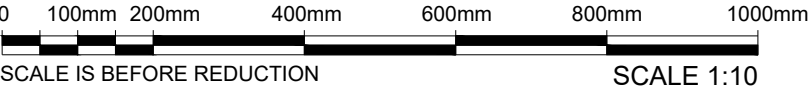
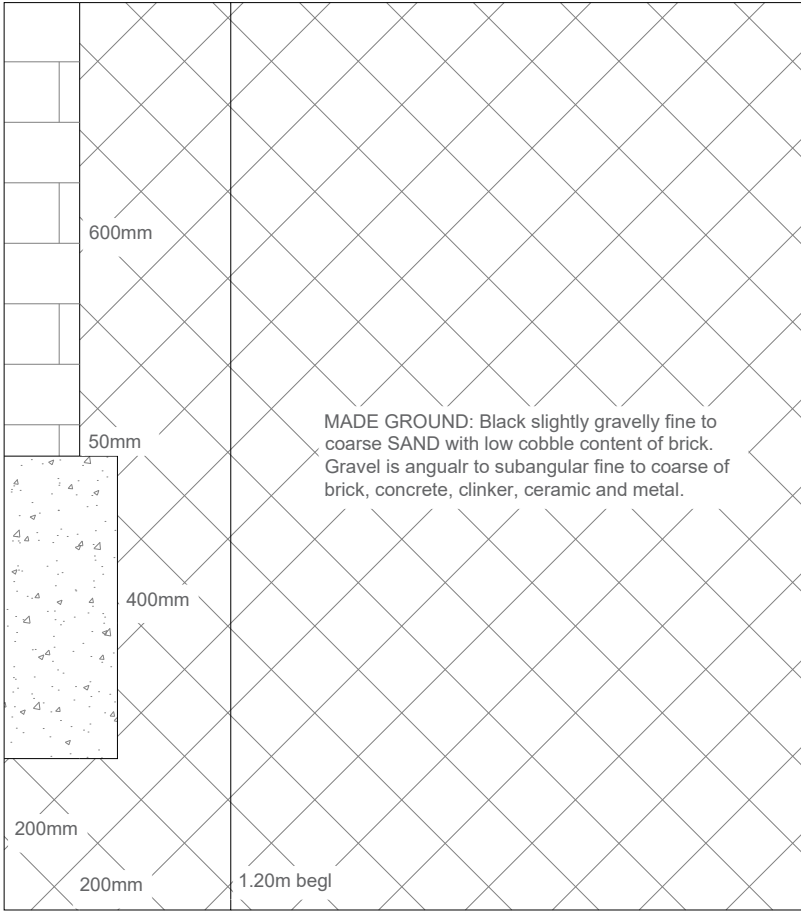
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	OAK CONSTRUCTION PROJECTS	OCTOBER 2025				Preliminary					
	PROJECT TITLE	SCALE				Draft					
	31 MACLURE ROAD, ROCHDALE	NTS				Issued					
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	EXPLORATORY HOLE LOCATION PLAN	GRO-25277-P02	Rev.	Details	Date	Approved					



HP01



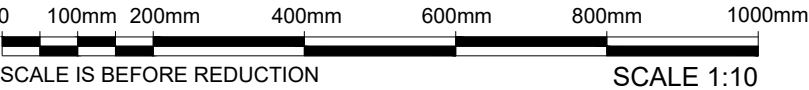
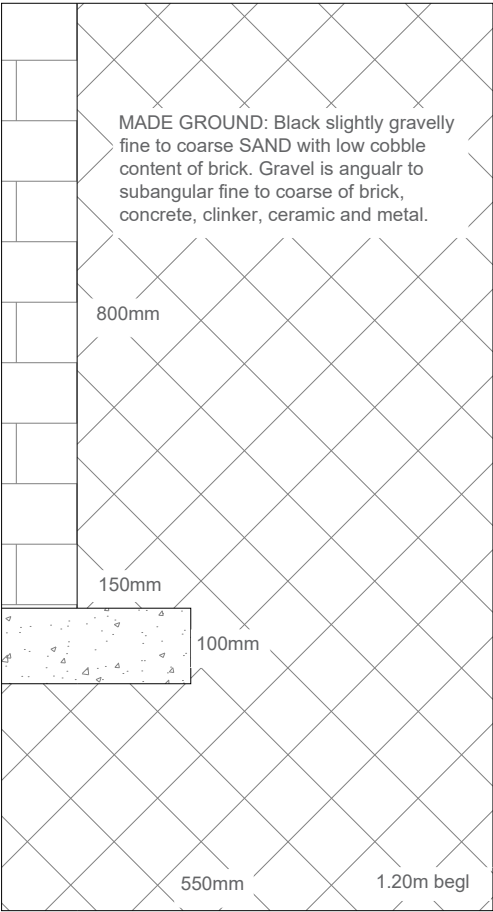
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	MACLURE ROAD, ROCHDALE	1:10@A4				Issued		
	PLAN TITLE	PLAN NUMBER				For Comment		
	FOUNDATION INSPECTION PIT - HP02	GRO-25277-P04B	Rev.	Details	Date	Approved		



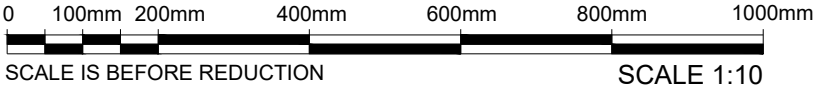
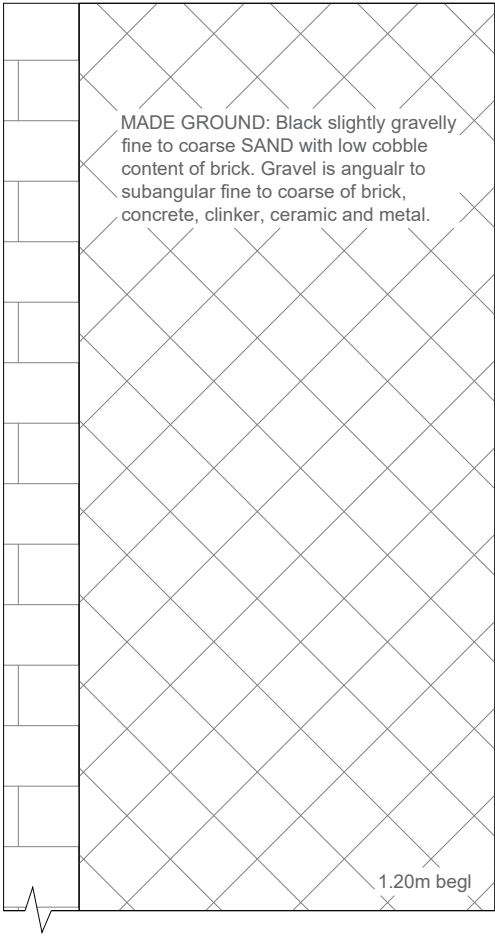
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	PLAN TITLE	FOUNDATION INSPECTION PIT - HP03	PLAN NUMBER	GRO-25277-P04C				Draft		
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								For Comment		
			Rev.	Details	Date			Approved		

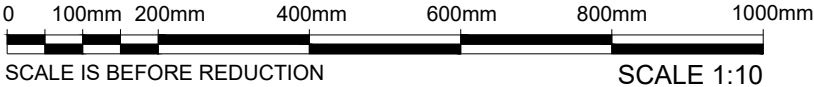
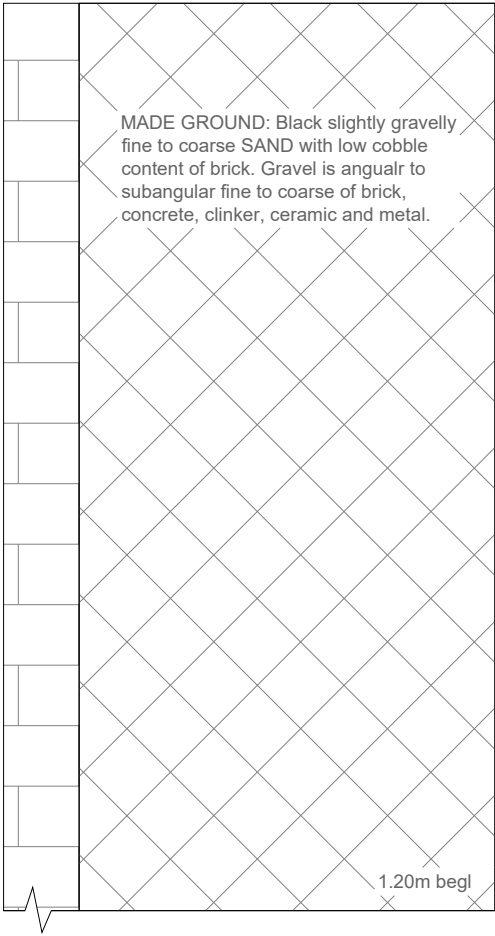


HP04



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	PLAN TITLE	FOUNDATION INSPECTION PIT - HP04	PLAN NUMBER	GRO-25277-P04D				Draft		
								Issued		
								For Comment		
			Rev.	Details	Date			Approved		

HP05



CLIENT	ROCHDALE BOROUGH COUNCIL
PROJECT TITLE	MACLURE ROAD, ROCHDALE
PLAN TITLE	FOUNDATION INSPECTION PIT - HP05

DATE	NOVEMBER 2025
SCALE	1:10@A4
PLAN NUMBER	GRO-25277-P04E

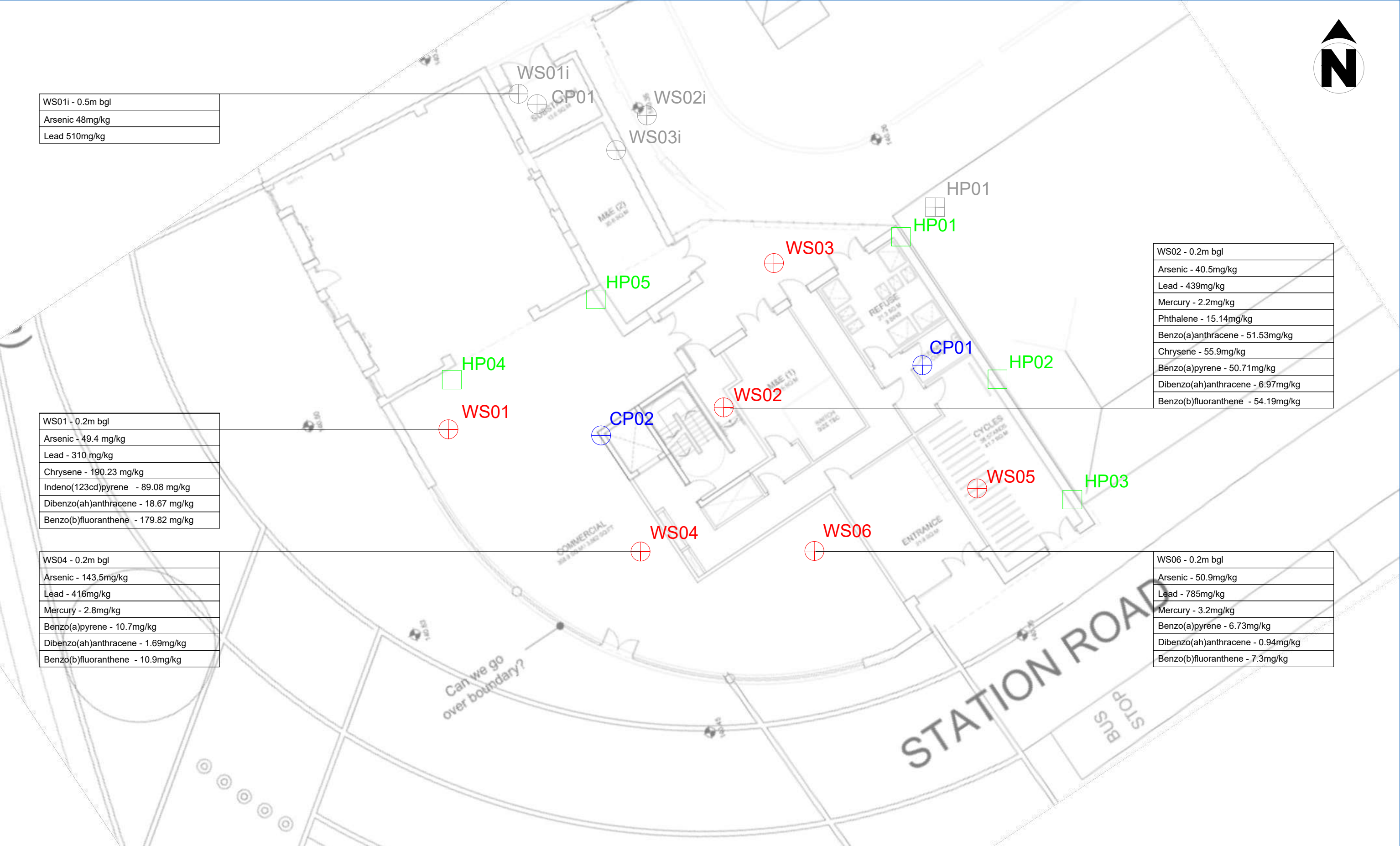
Rev.	Details
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Date

Status
Preliminary
Draft
Issued
For Comment
Approved

Notes





WS01i - 0.5m bgl
Arsenic 48mg/kg
Lead 510mg/kg

WS01 - 0.2m bgl
Arsenic - 49.4 mg/kg
Lead - 310 mg/kg
Chrysene - 190.23 mg/kg
Indeno(123cd)pyrene - 89.08 mg/kg
Dibenzo(ah)anthracene - 18.67 mg/kg
Benzo(b)fluoranthene - 179.82 mg/kg

WS04 - 0.2m bgl
Arsenic - 143.5mg/kg
Lead - 416mg/kg
Mercury - 2.8mg/kg
Benzo(a)pyrene - 10.7mg/kg
Dibenzo(ah)anthracene - 1.69mg/kg
Benzo(b)fluoranthene - 10.9mg/kg

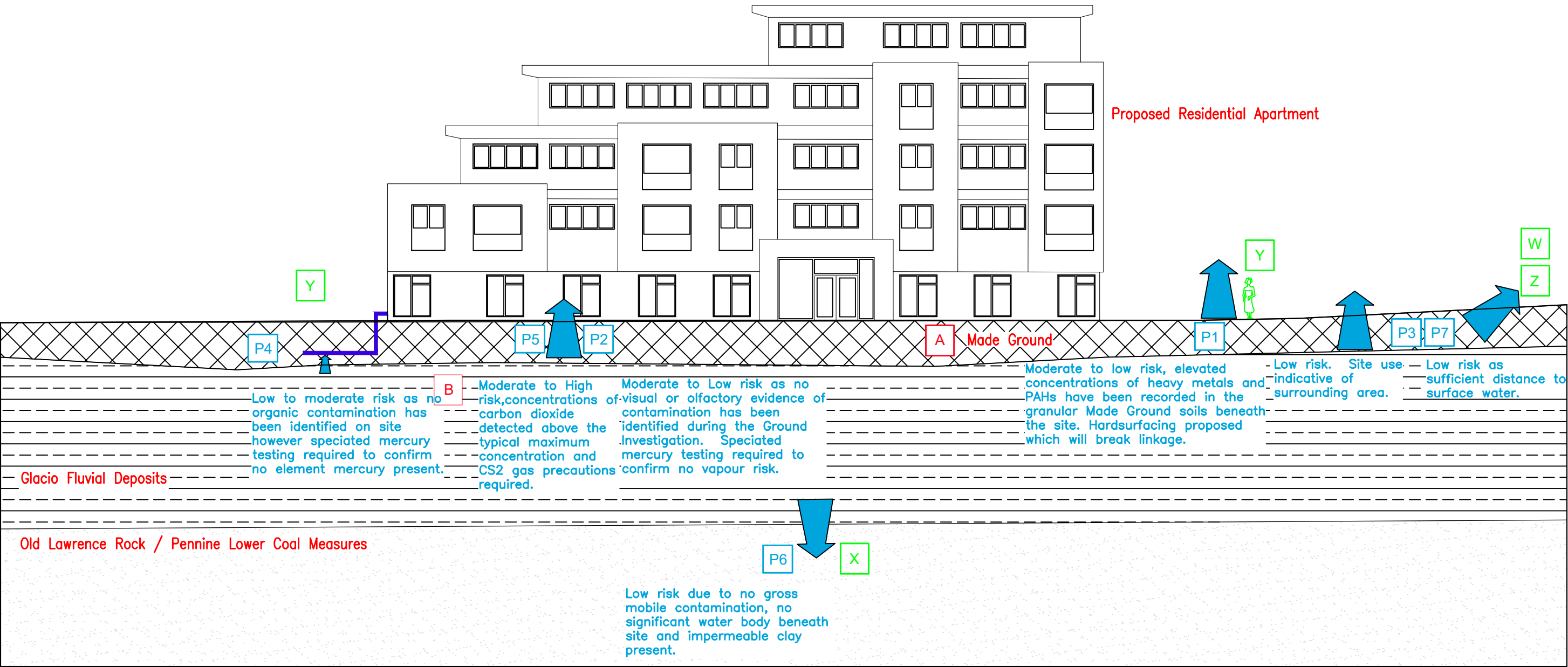
WS02 - 0.2m bgl
Arsenic - 40.5mg/kg
Lead - 439mg/kg
Mercury - 2.2mg/kg
Phthalene - 15.14mg/kg
Benzo(a)anthracene - 51.53mg/kg
Chrysene - 55.9mg/kg
Benzo(a)pyrene - 50.71mg/kg
Dibenzo(ah)anthracene - 6.97mg/kg
Benzo(b)fluoranthene - 54.19mg/kg

WS06 - 0.2m bgl
Arsenic - 50.9mg/kg
Lead - 785mg/kg
Mercury - 3.2mg/kg
Benzo(a)pyrene - 6.73mg/kg
Dibenzo(ah)anthracene - 0.94mg/kg
Benzo(b)fluoranthene - 7.3mg/kg

SOURCES
A. Contaminated soils / Made Ground. B. Ground gas.

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

RECEPTORS
W. Rochdale Canal circa 530m south of the site X. Groundwater within the Secondary A Aquifers Y. Site end users Z. Adjacent site users



	CLIENT ROCHDALE BOROUGH COUNCIL	DATE JANUARY 2026				Status	Notes
	PROJECT TITLE 31 MACLURE ROAD, ROCHDALE	SCALE NTS				Preliminary	
	PLAN TITLE REVISED CONCEPTUAL SITE MODEL	PLAN NUMBER GRO-25277-P06				Draft	
						Issued	
						For Comment	
			Rev.	Details	Date	Approved	



APPENDIX 2 - Site Photographs



Photograph 1 – Building to be retained in the north of the site



Photograph 2 – East of the site



Photograph 3 – West of site and adjacent commercial building



Photograph 4 – West of site

APPENDIX 3 - Exploratory Hole Logs

Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
CP

Location: ROCHDALE

Level:

Scale
1:50

Client: ROCHDALE BOROUGH COUNCIL

Dates: 17/11/2025 - 18/11/2025

Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 0.20 0.20 - 0.80	D ES B		0.20			MADE GROUND: Black slightly gravelly fine to coarse SAND with low cobble content of brick. Gravel is angular to subangular fine to coarse of brick, concrete, clinker, ceramic and metal.	
		0.80 - 1.20	D		0.80			MADE GROUND: Dark grey slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick and siltstone.	
		1.20 1.20 1.20 - 1.65	ES D	N=14 (2,2/2,4,4,4)				Medium dense brown grey sandy angular to subangular fine to coarse GRAVEL of chert and quartzite. Sand is fine to coarse.	1
		2.00 2.00 - 2.45	D	N=42 (25,14/10,7,7,18)				Becoming cobbly from 1.90m begl. Becoming dense at 2.00m begl.	2
		3.00 3.00 - 3.45	D	N=16 (2,4/3,4,4,5)				Becoming medium dense at 3.00m begl.	3
		4.00 4.00 - 4.45	D	N=11 (2,1/3,1,4,3)					4
		5.00 5.00 - 5.45	D	N=15 (3,3/4,3,4,4)					5
		6.00 6.00 - 6.45	D	N=14 (2,3/3,2,4,5)					6
		7.50 7.50 - 7.95	D	N=16 (2,2/3,4,4,5)					7
		9.00 9.00 - 9.45	D	N=24 (3,4/6,4,7,7)					9
								Continued on next sheet	10

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. Groundwater encountered at 3.50m and 9.00m begl. 4. Borehole terminated at 25.00m begl. 5. Monitoring standpipe installed to 5.00m begl (1.00m plain, 4.00m slotted).



Borehole Log

Borehole No.

CP01

Sheet 2 of 3

Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
CP

Location: ROCHDALE

Level:

Scale
1:50

Client: ROCHDALE BOROUGH COUNCIL

Dates: 17/11/2025 - 18/11/2025

Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.10 - 10.55	D	N=18 (3,4/5,4,4,5)					11
		10.50							
		11.30 - 11.60	B	N=17 (3,3/4,3,5,5)	11.30 11.60		Firm brown sandy silty CLAY. Sand is fine.	12	
		12.00 12.00 - 12.45	D				Medium dense brown grey sandy angular to subangular fine to coarse GRAVEL of chert and quartzite. Sand is fine to coarse.		
		13.50 13.50 - 13.91	D	N=47 (5,5/5,10,17,15)			Becoming dense at 13.50m begl.	14	
		15.00 15.00 - 15.45	D				N=24 (5,5/5,6,6,7)		
		16.50 16.50	D	N=20 (3,3/4,5,5,6)				17	
		18.00 18.00	D				N=25 (2,3/4,5,5,11)		
		19.50 19.50	D	N=23 (4,4/5,6,6,6)			Medium dense brown grey clayey sandy angular to subangular fine to coarse GRAVEL of chert and quartzite. Sand is fine.	18	
							Continued on next sheet	20	

Continued on next sheet

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. Groundwater encountered at 3.50m and 9.00m begl. 4. Borehole terminated at 25.00m begl. 5. Monitoring standpipe installed to 5.00m begl (1.00m plain, 4.00m slotted).



Borehole Log

Borehole No.

CP01

Sheet 3 of 3

Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
CP

Location: ROCHDALE

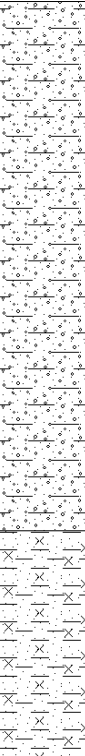
Level:

Scale
1:50

Client: ROCHDALE BOROUGH COUNCIL

Dates: 17/11/2025 - 18/11/2025

Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		21.00 21.00	D	N=23 (3,3/4,4,7,8)	23.50			Firm brown sandy silty CLAY. Sand is fine.	21
		22.50 22.50 - 22.95	D	N=23 (3,4/4,6,6,7)					22
		24.50 - 24.95	U						23
		25.00 25.00 - 25.45	D	N=23 (3,4/4,5,7,7)					24
									25
								End of borehole at 25.00 m	25
									26
									27
									28
									29
									30

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. Groundwater encountered at 3.50m and 9.00m begl. 4. Borehole terminated at 25.00m begl. 5. Monitoring standpipe installed to 5.00m begl (1.00m plain, 4.00m slotted).



Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
CP

Location: ROCHDALE

Level:

Scale
1:50

Client: ROCHDALE BOROUGH COUNCIL

Dates: 19/11/2025 - 20/11/2025

Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 0.20	D ES					MADE GROUND: Black slightly gravelly fine to coarse SAND with low cobble content of brick. Gravel is angular to subangular fine to coarse of brick, concrete, clinker, ceramic and metal.	
		0.70 0.70 - 1.20 1.00	B B ES		0.70			Medium dark grey slightly gravelly fine to coarse fine to coarse SAND. Gravel is angular to subangular fine to coarse of siltstone.	1
		1.20 1.20 - 1.65	D	N=10 (1,1/1,2,3,4)	1.70				
		2.00 2.00 - 2.45	D	N=31 (4,4/7,6,8,10)				Dense brown grey sandy angular to subangular fine to coarse GRAVEL of chert and quartzite. Sand is fine to coarse.	2
		3.00 3.00 - 3.45	D	N=50 (4,4/50 for 295mm)				Becoming very dense at 3.00m begl.	3
		4.00 4.00 - 4.45	D	N=50 (5,10/50 for 190mm)					4
		5.00 5.00 - 5.45	D	N=12 (2,3/2,3,3,4)				Becoming medium dense at 5.00m begl	5
		6.50 6.50 - 6.95	D	N=13 (2,2/2,3,4,4)					6
		8.00 8.00 - 8.45	D	N=11 (1,1/1,2,4,4)					7
		9.50 9.50 - 9.95	D	N=20 (3,4/4,5,5,6)					8
								Continued on next sheet	10

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. Groundwater encountered at 5.00m and 1.50m begl. 4. Borehole terminated at 25.00m begl. 5. Monitoring standpipe installed to 5.00m begl (1.00m plain, 4.00m slotted).



Borehole Log

Borehole No.

CP02

Sheet 2 of 3

Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
CP

Location: ROCHDALE

Level:

Scale
1:50

Client: ROCHDALE BOROUGH COUNCIL

Dates: 19/11/2025 - 20/11/2025

Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		10.50 - 10.80	B	N=23 (3,4/5,5,6,7)	10.50						
		11.00 11.00 - 11.45	D		10.80		Firm brown sandy silty CLAY. Sand is fine.	11 -			
		12.50 12.50 - 12.95	D	N=27 (3,6/6,7,6,8)						12 -	
		14.00 14.00 - 14.45	D	N=27 (4,5/5,7,10,5)						13 -	
		15.50 15.50 - 15.95	D	N=28 (4,6/6,7,7,8)						14 -	
		17.00 17.00 - 17.45	D	N=21 (4,4/5,4,6,6)						15 -	
		18.50 18.50 - 18.95	D	N=29 (3,4/4,5,10,10)						16 -	
											17 -
											18 -
											19 -
			20.00		N=17 (2,3/3,3,4,7)					Medium dense brown silty fine SAND. Sand is fine.	20 -
Continued on next sheet									20 -		

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. Groundwater encountered at 5.00m and 1.50m begl. 4. Borehole terminated at 25.00m begl. 5. Monitoring standpipe installed to 5.00m begl (1.00m plain, 4.00m slotted).



Borehole Log

Borehole No.

CP02

Sheet 3 of 3

Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
CP

Location: ROCHDALE

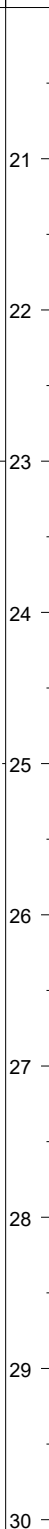
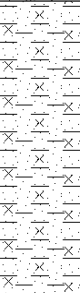
Level:

Scale
1:50

Client: ROCHDALE BOROUGH COUNCIL

Dates: 19/11/2025 - 20/11/2025

Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description						
		Depth (m)	Type	Results										
		20.00 - 20.45	D	N=22 (3,3/3,5,6,8)	23.00									
		21.50 21.50 - 21.95	D											
		23.00 23.00 - 23.45	D	N=18 (2,3/4,5,4,5)										
		24.50 - 24.95	U	N=23 (3,4/5,5,6,7)										
		24.80 25.00 25.00 - 25.45	B D											
End of borehole at 25.00 m														

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. Groundwater encountered at 5.00m and 1.50m begl. 4. Borehole terminated at 25.00m begl. 5. Monitoring standpipe installed to 5.00m begl (1.00m plain, 4.00m slotted).



Borehole Log

Borehole No.

WS01

Sheet 1 of 1

Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
WS

Location: ROCHDALE

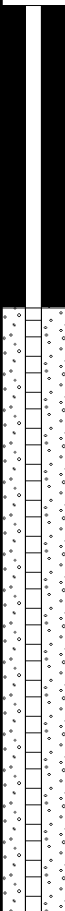
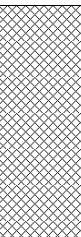
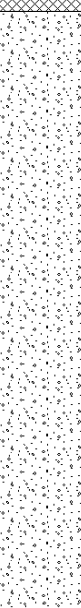
Level:

Scale
1:25

Client: ROCHDALE BOROUGH COUNCIL

Dates: 17/11/2025 - 17/11/2025

Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.80			MADE GROUND: Black slightly gravelly fine to coarse SAND with low cobble content of brick. Gravel is angular to subangular fine to coarse of brick, concrete, clinker, ceramic and metal.	1
		1.00	ES					Medium dense dark grey fine to coarse slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse siltstone.	
		1.20	D	N=11 (1,2/2,3,3,3)					2
		1.20							
		2.00	D	N=17 (0,1/2,5,5,5)					
		2.00							
					2.80				
		3.00	D	N=50 (2,4/5,7,10,28)	3.00			Very dense brown slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of siltstone.	3
		3.00						End of borehole at 3.00 m	
									4
									5

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. Groundwater encountered at 2.45m begl. 4. Borehole terminated at 3.00m begl due to refusal. 5. Monitoring standpipe installed to 3.00m begl (1.00m plain, 2.00m slotted).



Borehole Log

Borehole No.

WS02

Sheet 1 of 1

Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
WS

Location: ROCHDALE

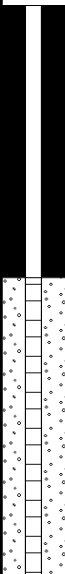
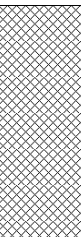
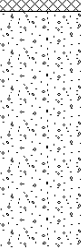
Level:

Scale
1:25

Client: ROCHDALE BOROUGH COUNCIL

Dates: 17/11/2025 - 17/11/2025

Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES	N=8 (1,0/1,1,2,4)	0.80			MADE GROUND: Black slightly gravelly fine to coarse SAND with low cobble content of brick. Gravel is angular to subangular fine to coarse of brick, concrete, clinker, ceramic and metal.	1
		1.00 1.00	D ES					Loose dark grey fine to coarse slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse siltstone.	
		1.20							
		1.90 1.90	D	N=50 (5,7/8,10,12,20)	1.90			Very dense brown slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of siltstone.	2
								End of borehole at 1.90 m	
									3
									4
									5

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. No groundwater encountered. 4. Borehole terminated at 1.90m begl due to refusal. 5. Monitoring standpipe installed to 1.90m begl (0.90m plain, 1.00m slotted).



Borehole Log

Borehole No.

WS03

Sheet 1 of 1

Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
WS

Location: ROCHDALE

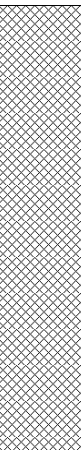
Level:

Scale
1:25

Client: ROCHDALE BOROUGH COUNCIL

Dates: 17/11/2025 - 17/11/2025

Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES					MADE GROUND: Black slightly gravelly fine to coarse SAND with low cobble content of brick. Gravel is angular to subangular fine to coarse of brick, concrete, clinker, ceramic and metal.	1
		1.00	D						
		1.20		N=21 (2,2/3,3,5,10)					
		1.60	ES		1.50			Very dense brown slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of siltstone.	2
		1.80 1.80	D	N=50 (0,1/50 for 210mm)	1.80				
								End of borehole at 1.80 m	3
									4
									5

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. No groundwater encountered. 4. Borehole terminated at 1.80m begl due to refusal. 5. Borehole backfilled with arisings



Borehole Log

Borehole No.

WS04

Sheet 1 of 1

Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
WS

Location: ROCHDALE

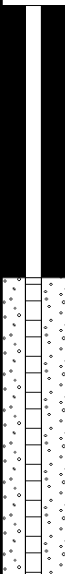
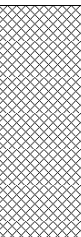
Level:

Scale
1:25

Client: ROCHDALE BOROUGH COUNCIL

Dates: 17/11/2025 - 17/11/2025

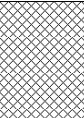
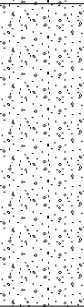
Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES					MADE GROUND: Black slightly gravelly fine to coarse SAND with low cobble content of brick. Gravel is angular to subangular fine to coarse of brick, concrete, clinker, ceramic and metal.	
		0.90	ES		0.80			Dark grey slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse siltstone.	1
		1.00	D		1.10			Medium dense brown slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of siltstone.	
		1.20		N=25 (1,2/2,3,8,12)					
		1.90	D		1.90			End of borehole at 1.90 m	2
		1.90		N=50 (3,10/50 for 210mm)					3
									4
									5

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. No groundwater encountered. 4. Borehole terminated at 1.90m begl due to refusal. 5. Monitoring standpipe installed to 1.90m begl (0.90m plain, 1.00m slotted).



				Borehole Log				Borehole No. WS05 Sheet 1 of 1	
Project Name: 29-31 MACLURE ROAD, ROCHDALE				Project No. GRO-25277		Co-ords: -		Hole Type WS	
Location: ROCHDALE				Level:		Scale 1:25			
Client: ROCHDALE BOROUGH COUNCIL				Dates: 17/11/2025 - 17/11/2025		Logged By WM			
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.40			MADE GROUND: Black slightly gravelly fine to coarse SAND with low cobble content of brick. Gravel is angular to subangular fine to coarse of brick, concrete, clinker, ceramic and metal.	1
		0.50	ES					Dark grey slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse siltstone.	
		1.00	D					Medium dense brown slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of siltstone.	
		1.20		N=16 (1,1/2,2,5,7)					
		1.90 1.90	D	N=50 (25 for 79mm/50 for 135mm)	1.90		End of borehole at 1.90 m		
									3
									4
									5

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. No groundwater encountered. 4. Borehole terminated at 1.90m begl due to refusal. 5. Borehole backfilled with arisings



Borehole Log

Borehole No.

WS06

Sheet 1 of 1

Project Name: 29-31 MACLURE ROAD,
ROCHDALEProject No.
GRO-25277

Co-ords: -

Hole Type
WS

Location: ROCHDALE

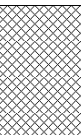
Level:

Scale
1:25

Client: ROCHDALE BOROUGH COUNCIL

Dates: 17/11/2025 - 17/11/2025

Logged By
WM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES					MADE GROUND: Black slightly gravelly fine to coarse SAND with low cobble content of brick. Gravel is angular to subangular fine to coarse of brick, concrete, clinker, ceramic and metal.	1
		0.50	ES		0.45			Dark grey slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse siltstone.	
		1.00	D		0.80			Medium dense brown slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of siltstone.	
		1.20		N=21 (2,2/3,3,4,11)					
		1.70	D		1.70				
		1.70		N=50 (2,8/50 for 210mm)				End of borehole at 1.70 m	2
									3
									4
									5

Remarks

1. Location cleared of services by handheld CAT scanner. 2. Hand dug inspection pit to 1.20m begl. 3. No groundwater encountered. 4. Borehole terminated at 1.70m begl due to refusal. 5. Borehole backfilled with arisings



APPENDIX 4 - Geo-Environmental Testing Results

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



4225



Attention : Luke Harrison
Date : 20th January, 2026
Your reference : GRO - 25277
Our reference : Test Report 25/19317 Batch 1
Location : Maclure Road
Date samples received : 20th November, 2025
Status : Final Report
Issue : 202601201554

Fourteen samples were received for analysis on 20th November, 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 - 17.086 kg of CO2

Scope 1&2&3 emissions - 40.38 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 - 25277
Location: Maclure Road
Contact: Luke Harrison
EMT Job No: 25/19317

Report : Solid

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

EMT Sample No.	4-6	7-9	13-15	16-18	25-27	31-33	37-39				Please see attached notes for all abbreviations and acronyms		
Sample ID	CP01	WS01	WS02	WS03	WS04	WS05	WS06						
Depth	1.20	0.10	0.20	0.30	0.20	0.20	0.20						
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	17/11/2025	17/11/2025	17/11/2025	17/11/2025	17/11/2025	17/11/2025	17/11/2025						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	20/11/2025	20/11/2025	20/11/2025	20/11/2025	20/11/2025	20/11/2025	20/11/2025				LOD/LOR	Units	Method No.
Arsenic #	-	49.4	40.5	16.1	143.5	16.2	50.9				<0.5	mg/kg	TM30/PM15
Cadmium #	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3				<0.3	mg/kg	TM30/PM15
Chromium #	-	30.6	29.3	26.9	29.2	24.8	43.8				<0.5	mg/kg	TM30/PM15
Copper #	-	177	221	80	140	48	170				<1	mg/kg	TM30/PM15
Lead #	-	447	439	94	416	132	785				<5	mg/kg	TM30/PM15
Mercury #	-	0.8	2.2	0.4	2.8	0.3	3.2				<0.1	mg/kg	TM30/PM15
Nickel #	-	41.5	38.5	21.9	45.7	17.6	36.2				<0.7	mg/kg	TM30/PM15
Selenium #	-	2	1	<1	1	1	2				<1	mg/kg	TM30/PM15
Zinc #	-	140	256	38	105	30	948				<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	-	160.27 ^{AA}	15.14 ^{AA}	<0.04	0.72 ^{AA}	<0.04	1.03				<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	<0.30 ^{AA}	<0.30 ^{AA}	<0.03	0.71 ^{AA}	<0.03	<0.03				<0.03	mg/kg	TM4/PM8
Acenaphthene #	-	115.06 ^{AA}	20.54 ^{AA}	<0.05	1.94 ^{AA}	<0.05	2.80				<0.05	mg/kg	TM4/PM8
Fluorene #	-	82.42 ^{AA}	12.89 ^{AA}	<0.04	1.87 ^{AA}	<0.04	1.87				<0.04	mg/kg	TM4/PM8
Phenanthrene #	-	>>464.01 ^{AA}	90.75 ^{AA}	0.05	14.99 ^{AA}	0.14	13.80				<0.03	mg/kg	TM4/PM8
Anthracene #	-	118.30 ^{AA}	17.77 ^{AA}	<0.04	3.36 ^{AA}	<0.04	2.66				<0.04	mg/kg	TM4/PM8
Fluoranthene #	-	>>432.02 ^{AA}	112.82 ^{AA}	0.06	17.84 ^{AA}	0.18	15.86				<0.03	mg/kg	TM4/PM8
Pyrene #	-	>>336.83 ^{AA}	94.86 ^{AA}	0.06	14.86 ^{AA}	0.18	13.29				<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	183.88 ^{AA}	51.35 ^{AA}	<0.06	8.72 ^{AA}	0.13	6.88				<0.06	mg/kg	TM4/PM8
Chrysene #	-	190.23 ^{AA}	55.90 ^{AA}	0.05	9.10 ^{AA}	0.11	7.72				<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene #	-	249.75 ^{AA}	75.27 ^{AA}	<0.07	15.14 ^{AA}	0.15	10.14				<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	164.86 ^{AA}	50.71 ^{AA}	<0.04	10.70 ^{AA}	0.09	6.73				<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	-	89.08 ^{AA}	26.13 ^{AA}	<0.04	6.82 ^{AA}	0.06	3.73				<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	18.67 ^{AA}	6.97 ^{AA}	<0.04	1.69 ^{AA}	<0.04	0.94				<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	76.92 ^{AA}	23.48 ^{AA}	<0.04	6.31 ^{AA}	0.06	3.29				<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	2682.3 ^{AA}	654.6 ^{AA}	<0.6	114.8 ^{AA}	1.1	90.7				<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	179.82 ^{AA}	54.19 ^{AA}	<0.05	10.90 ^{AA}	0.11	7.30				<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	69.93 ^{AA}	21.08 ^{AA}	<0.02	4.24 ^{AA}	0.04	2.84				<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	101 ^{AA}	100 ^{AA}	95	97 ^{AA}	95	93				<0	%	TM4/PM8
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	-	<0.1 ^{SV}	-	<0.1 ^{SV}	-	-	<0.1 ^{SV}				<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	-	<0.1 ^{SV}	-	<0.1 ^{SV}	-	-	<0.1 ^{SV}				<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL) #	-	0.3 ^{SV}	-	<0.1 ^{SV}	-	-	<0.1 ^{SV}				<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	-	12.7	-	1.3	-	-	<0.2				<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	-	39	-	6	-	-	25				<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	-	68	-	<7	-	-	30				<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	-	224	-	<7	-	-	97				<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH_CU+HS_1D_AL)	-	344	-	<19	-	-	152				<19	mg/kg	TM5/PM8/PM16/PM12/PM15

Element Materials Technology

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Location: Maclure Road
Contact: Luke Harrison
EMT Job No: 25/19317

Report : Solid

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EMT Sample No.	4-6	7-9	13-15	16-18	25-27	31-33	37-39				Please see attached notes for all abbreviations and acronyms		
Sample ID	CP01	WS01	WS02	WS03	WS04	WS05	WS06						
Depth	1.20	0.10	0.20	0.30	0.20	0.20	0.20						
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	17/11/2025	17/11/2025	17/11/2025	17/11/2025	17/11/2025	17/11/2025	17/11/2025						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	20/11/2025	20/11/2025	20/11/2025	20/11/2025	20/11/2025	20/11/2025	20/11/2025				LOD/LOR	Units	Method No.
TPH CWG													
Aromatics													
>C5-EC7 (HS_1D_AR) #	-	<0.1 ^{SV}	-	<0.1 ^{SV}	-	-	<0.1 ^{SV}				<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	-	<0.1 ^{SV}	-	<0.1 ^{SV}	-	-	<0.1 ^{SV}				<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	-	<0.1 ^{SV}	-	<0.1 ^{SV}	-	-	<0.1 ^{SV}				<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	-	120.0	-	<0.2	-	-	1.2				<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	-	613	-	<4	-	-	45				<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	-	2234	-	<7	-	-	210				<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	-	3762	-	<7	-	-	547				<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH_CU+HS_1D_AR) #	-	6729	-	<19	-	-	803				<19	mg/kg	TM5/PM8/PM16
Total aliphatics and aromatics (C5-35) (EH_CU+HS_1D_Total)	-	7073	-	<38	-	-	955				<38	mg/kg	TM5/PM8/PM16
MTBE #	-	<5 ^{SV}	-	<5 ^{SV}	-	-	<5 ^{SV}				<5	ug/kg	TM36/PM12
Benzene #	-	<5 ^{SV}	-	<5 ^{SV}	-	-	<5 ^{SV}				<5	ug/kg	TM36/PM12
Toluene #	-	6 ^{SV}	-	<5 ^{SV}	-	-	<5 ^{SV}				<5	ug/kg	TM36/PM12
Ethylbenzene #	-	20 ^{SV}	-	<5 ^{SV}	-	-	<5 ^{SV}				<5	ug/kg	TM36/PM12
m/p-Xylene #	-	34 ^{SV}	-	<5 ^{SV}	-	-	<5 ^{SV}				<5	ug/kg	TM36/PM12
o-Xylene #	-	39 ^{SV}	-	<5 ^{SV}	-	-	<5 ^{SV}				<5	ug/kg	TM36/PM12
Natural Moisture Content	-	25.3	28.6	22.3	19.9	26.5	45.1				<0.1	%	PM4/PM0
Hexavalent Chromium #	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3				<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0828	0.0883	0.2515	0.1138	0.1768	0.1208	0.3130				<0.0015	g/l	TM38/PM20
Organic Matter	-	33.4	32.4	11.3	28.1	12.1	18.6				<0.2	%	TM21/PM24
pH #	4.80	7.67	6.32	5.66	5.79	4.71	5.94				<0.01	pH units	TM73/PM11

Matrix : Solid

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Client Name: Groundtech Consulting Limited
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Location: Maclure Road
Contact: Luke Harrison

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
25/19317	1	WS01	0.10	9	Miriam Silverlock	15/01/2026	General Description (Bulk Analysis)	Brown soil, stones
					Miriam Silverlock	15/01/2026	Asbestos Fibres	NAD
					Miriam Silverlock	15/01/2026	Asbestos ACM	NAD
					Miriam Silverlock	15/01/2026	Asbestos Type	NAD
25/19317	1	WS02	0.20	15	Miriam Silverlock	15/01/2026	General Description (Bulk Analysis)	Brown soil, stones
					Miriam Silverlock	15/01/2026	Asbestos Fibres	NAD
					Miriam Silverlock	15/01/2026	Asbestos ACM	NAD
					Miriam Silverlock	15/01/2026	Asbestos Type	NAD
25/19317	1	WS03	0.30	18	Charlotte Taylor	15/01/2026	General Description (Bulk Analysis)	brown soil/stones
					Charlotte Taylor	15/01/2026	Asbestos Fibres	NAD
					Charlotte Taylor	15/01/2026	Asbestos Fibres (2)	NAD
					Charlotte Taylor	15/01/2026	Asbestos ACM	NAD
					Charlotte Taylor	15/01/2026	Asbestos ACM (2)	NAD
					Charlotte Taylor	15/01/2026	Asbestos Type	NAD
					Charlotte Taylor	15/01/2026	Asbestos Type (2)	NAD
25/19317	1	WS04	0.20	27	Charlotte Taylor	15/01/2026	General Description (Bulk Analysis)	brown soil/stones
					Charlotte Taylor	15/01/2026	Asbestos Fibres	NAD
					Charlotte Taylor	15/01/2026	Asbestos Fibres (2)	NAD
					Charlotte Taylor	15/01/2026	Asbestos ACM	NAD
					Charlotte Taylor	15/01/2026	Asbestos ACM (2)	NAD
					Charlotte Taylor	15/01/2026	Asbestos Type	NAD
					Charlotte Taylor	15/01/2026	Asbestos Type (2)	NAD
25/19317	1	WS05	0.20	33	Charlotte Taylor	15/01/2026	General Description (Bulk Analysis)	brown soil/stones
					Charlotte Taylor	15/01/2026	Asbestos Fibres	NAD
					Charlotte Taylor	15/01/2026	Asbestos Fibres (2)	NAD
					Charlotte Taylor	15/01/2026	Asbestos ACM	NAD
					Charlotte Taylor	15/01/2026	Asbestos ACM (2)	NAD
					Charlotte Taylor	15/01/2026	Asbestos Type	NAD
					Charlotte Taylor	15/01/2026	Asbestos Type (2)	NAD
25/19317	1	WS06	0.20	39	Charlotte Taylor	15/01/2026	General Description (Bulk Analysis)	brown soil/stones
					Charlotte Taylor	15/01/2026	Asbestos Fibres	NAD
					Charlotte Taylor	15/01/2026	Asbestos Fibres (2)	NAD
					Charlotte Taylor	15/01/2026	Asbestos ACM	NAD
					Charlotte Taylor	15/01/2026	Asbestos ACM (2)	NAD

Client Name: Groundtech Consulting Limited
Reference: GRO - 25277
Location: Maclure Road
Contact: Luke Harrison

[illegible]

Element Materials Technology

Notification of Deviating Samples

Client Name: Groundtech Consulting Limited

Reference: GRO - 25277

Location: Maclure Road

Contact: Luke Harrison

Matrix : Solid

[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.: 25/19317

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	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: 25/19317

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.	Yes		AR	Yes

EMT Job No: 25/19317

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
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

APPENDIX 5 - Geotechnical Testing Results

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



Attention : Rebecca Rowlinson
Date : 4th December, 2025
Your reference : GRO-25277
Our reference : Test Report 25/20040 Batch 1
Location : Maclure Road, Rochdale
Date samples received : 29th November, 2025
Status : Final Report
Issue : 202512041250

Four samples were received for analysis on 29th November, 2025 of which four 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 - 3.186 kg of CO2

Scope 1&2&3 emissions - 7.528 kg of CO2

Authorised By:



Phil Sommerton BSc

Senior Technical Account Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-25277
Location: Maclure Road, Rochdale
Contact: Rebecca Rowlinson
EMT Job No: 25/20040

Report : Solid

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

[illegible]

Client Name:	Groundtech Consulting Limited
Reference:	GRO-25277
Location:	Maclure Road, Rochdale
Contact:	Rebecca Rowlinson

[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.: 25/20040

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: 25/20040

[illegible]

APPENDIX 6 - Gas Monitoring Results

SITE NAME:		MACLURE ROAD, ROCHDALE				ENGINEER:		William Sandiford Mitchell				
CLIENT:		OAK CONSTRUCTION PROJECTS				DATE:		26/11/2025				
JOB NO:		GRO-25277										
Pressure Trend:		Steady	Weather:				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								
CP01	0.0	0.0	0.00	0.0	0.0	0.0	3.4	2.8	16.4	17.1	0.0	0.0	10.0	0.0	0.0034	0.0000	998	-	N	N/A	N/A	3.65
CP02	0.0	0.0	0.00	0.0	0.0	0.0	9.3	9.3	11.8	11.8	0.0	0.0	0.0	0.0	0.0093	0.0000	997	-	N	N/A	N/A	3.82
WS01	0.0	0.0	0.00	0.0	0.0	0.0	3.9	4.0	15.0	14.9	0.0	0.0	10.0	0.0	0.0039	0.0000	997	-	N	N/A	N/A	1.13
WS02	0.0	0.0	0.00	0.0	0.0	0.0	4.2	2.0	15.5	18.3	0.0	0.0	10.0	0.0	0.0042	0.0000	996	-	N	N/A	N/A	0.83
WS04	0.0	0.0	0.00	0.0	0.0	0.0	6.2	6.4	12.5	12.0	0.0	0.0	10.0	0.0	0.0062	0.0000	996	-	N	N/A	N/A	0.97

Notes:

SITE NAME:		MACLURE ROAD, ROCHDALE				ENGINEER:		Georgia Barnes				
CLIENT:		OAK CONSTRUCTION PROJECTS				DATE:		09/12/2025				
JOB NO:		GRO-25277										
Pressure Trend:		Rising	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		20.4	0.0	0.0	0.0	0.0	0.0					
Finish		20.4	0.0	0.0	0.0	0.0	0.0					

[illegible]

SITE NAME:		MACLURE ROAD, ROCHDALE				ENGINEER:		William Sandiford Mitchell				
CLIENT:		OAK CONSTRUCTION PROJECTS				DATE:		07/01/2026				
JOB NO:		GRO-25277										
Pressure Trend:		Falling	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					

[illegible]

Notes: Inaccessible- N/A

SITE NAME:		MACLURE ROAD, ROCHDALE				ENGINEER:		William Sandiford Mitchell				
CLIENT:		OAK CONSTRUCTION PROJECTS				DATE:		19/01/2026				
JOB NO:		GRO-25277										
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		20.8	0.0	0.0	0.0	0.0	0.0					
Finish		20.8	0.0	0.0	0.0	0.0	0.0					

[illegible]

APPENDIX 7 - Generic Screening Values (Residential End Use)

Generic Assessment Criteria (GAC)								GROUNDTECH CONSULTING
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) ^{vop}	330 (118) ^{vop}	760 (283) ^{vop}	130 (48) ^{vop}	330 (118) ^{vop}	770 (283) ^{vop}	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) ^{sol}	92000 (21) ^{sol}	110000 ^f	65000 (8.48) ^{sol}	92000 (21) ^{sol}	110000 ^f	LQM S4ULs
Aliphatic EC 35 - 44	mg/kg	65000 (8.48) ^{sol}	92000 (21) ^{sol}	110000 ^f	65000	92000 (21) ^{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

Generic Assessment Criteria (GAC)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				</
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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:

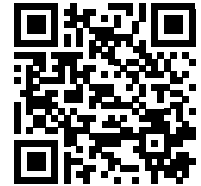
- **Very high:** There is a high probability that severe harm could arise to a designated receptor from an identified hazard or there is evidence that severe harm is currently happening. This risk, if realised, could result in substantial liability. Urgent investigation and remediation are likely to 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 - 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)



DQ3K6-ISFE7-SZCL6

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-25-19317-Batch-1-202601201554

Description/Comments

Project

29-31 Maclure Road

Site

Classified by

Name: **Connor Hastings**
Date: **21 Jan 2026 15:42 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

2 - Material Characterisation

Address of the waste

31 Maclure Road

Post Code N/A

SIC for the process giving rise to the waste

41202 Construction of domestic buildings

Description of industry/producer giving rise to the waste

Redevelopment of the site as commercial and residential apartments.

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

Waste created during construction.

Description of the waste

Made Ground comprising gravelly Sand.

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS01-17/11/2025-0.10m		Hazardous	HP 7, HP 11	3
2	WS02-17/11/2025-0.20m		Non Hazardous		5
3	WS03-17/11/2025-0.30m		Non Hazardous		7
4	WS04-17/11/2025-0.20m		Non Hazardous		9
5	WS05-17/11/2025-0.20m		Non Hazardous		11
6	WS06-17/11/2025-0.20m		Non Hazardous		13

Related documents

#	Name	Description
1	EMT-25-19317-Batch-1-202601201554.HWOL	Element .hwol file used to populate the Job

Report

Created by: Connor Hastings

Created date: 21 Jan 2026 15:42 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	15
Appendix B: Rationale for selection of metal species	15
Appendix C: Version	16

Classification of sample: WS01-17/11/2025-0.10m

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

Sample details

Sample name:	LoW Code:
WS01-17/11/2025-0.10m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
25.3%	Entry:
(dry weight correction)	17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

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.: 0.564%)

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.: 0.564%)

Determinands

Moisture content: 25.3% 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	pH				7.67 pH		7.67 pH	7.67 pH		
2	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							
3	benzene				<5 µg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
4	toluene				6 µg/kg		0.0047 mg/kg	0.000000479 %	✓	
	601-021-00-3	203-625-9	108-88-3							
5	ethylbenzene				20 µg/kg		0.016 mg/kg	0.00000016 %	✓	
	601-023-00-4	202-849-4	100-41-4							
6	xylene				0.039 mg/kg		0.0311 mg/kg	0.000000311 %	✓	
	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]							
7	arsenic { arsenic pentoxide }				49.4 mg/kg	1.534	60.474 mg/kg	0.00605 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
8	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction			1	<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
	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 }									
	048-001-00-5									
9	copper { dicopper oxide; copper (I) oxide }				177 mg/kg	1.126	159.044 mg/kg	0.0159 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
10	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	447 mg/kg		356.744 mg/kg	0.0357 %	✓	
	082-001-00-6									
11	mercury { mercury }				0.8 mg/kg		0.638 mg/kg	0.0000638 %	✓	
	080-001-00-0	231-106-7	7439-97-6							
12	nickel { nickel diiodide }				41.5 mg/kg	5.324	176.344 mg/kg	0.0176 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
13	selenium { nickel selenate }				2 mg/kg	2.554	4.076 mg/kg	0.000408 %	✓	
	028-031-00-5	239-125-2	15060-62-5							
14	zinc { zinc oxide }				140 mg/kg	1.245	139.074 mg/kg	0.0139 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
15	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							
16	TPH (C6 to C40) petroleum group				7073 mg/kg		5644.852 mg/kg	0.564 %	✓	
			TPH							
17	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				30.6 mg/kg	1.462	35.693 mg/kg	0.00357 %	✓	
		215-160-9	1308-38-9							
Total:								0.658 %		

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 concentration of: 6000 mg/kg (0.6%) because: No free phase encountered.

Hazard Statements hit:

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

Because of determinands:

toluene (conc.: 4.79e-07%)

ethylbenzene (conc.: 1.6e-06%)

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

Because of determinands:

xylene (conc.: 3.11e-06%)

TPH (C6 to C40) petroleum group (conc.: 0.564%)

Classification of sample: WS02-17/11/2025-0.20m

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

Sample details

Sample name:	LoW Code:
WS02-17/11/2025-0.20m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
28.6%	Entry:
(dry weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 28.6% 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	pH				6.32	pH		6.32	pH	6.32 pH		
2	arsenic { arsenic pentoxide }				40.5	mg/kg	1.534	48.306	mg/kg	0.00483 %	✓	
	033-004-00-6	215-116-9	1303-28-2									
3	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		<0.3	mg/kg	<0.00003 %		<LOD
	048-001-00-5											
4	copper { dicopper oxide; copper (I) oxide }				221	mg/kg	1.126	193.485	mg/kg	0.0193 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	439	mg/kg		341.369	mg/kg	0.0341 %	✓	
	082-001-00-6											
6	mercury { mercury }				2.2	mg/kg		1.711	mg/kg	0.000171 %	✓	
	080-001-00-0	231-106-7	7439-97-6									
7	nickel { nickel diiodide }				38.5	mg/kg	5.324	159.398	mg/kg	0.0159 %	✓	
	028-029-00-4	236-666-6	13462-90-3									
8	selenium { nickel selenate }				1	mg/kg	2.554	1.986	mg/kg	0.000199 %	✓	
	028-031-00-5	239-125-2	15060-62-5									
9	zinc { zinc oxide }				256	mg/kg	1.245	247.781	mg/kg	0.0248 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
10	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									
11	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				29.3	mg/kg	1.462	33.3	mg/kg	0.00333 %	✓	
		215-160-9	1308-38-9									
Total:										0.103 %		

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: WS03-17/11/2025-0.30m

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

Sample details

Sample name:	LoW Code:
WS03-17/11/2025-0.30m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
22.3%	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
(dry weight correction)	Entry:

Hazard properties

None identified

Determinands

Moisture content: 22.3% 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	pH				5.66	pH		5.66	pH	5.66 pH		
2	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									
3	benzene				<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
4	toluene				<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
5	ethylbenzene				<5	µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
6	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]									
7	arsenic { arsenic pentoxide }				16.1	mg/kg	1.534	20.192	mg/kg	0.00202 %	✓	
	033-004-00-6	215-116-9	1303-28-2									
8	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		<0.3	mg/kg	<0.000003 %		<LOD
	048-001-00-5											
9	copper { dicopper oxide; copper (I) oxide }				80	mg/kg	1.126	73.648	mg/kg	0.00736 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
10	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	94	mg/kg		76.86	mg/kg	0.00769 %	✓	
	082-001-00-6											
11	mercury { mercury }				0.4	mg/kg		0.327	mg/kg	0.0000327 %	✓	
	080-001-00-0	231-106-7	7439-97-6									
12	nickel { nickel diiodide }				21.9	mg/kg	5.324	95.341	mg/kg	0.00953 %	✓	
	028-029-00-4	236-666-6	13462-90-3									
13	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									

#	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	zinc { zinc oxide }				38 mg/kg	1.245	38.675 mg/kg	0.00387 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
15	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							
16	TPH (C6 to C40) petroleum group				<38 mg/kg		<38 mg/kg	<0.0038 %		<LOD
			TPH							
17	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				26.9 mg/kg	1.462	32.147 mg/kg	0.00321 %	✓	
		215-160-9	1308-38-9							
Total:								0.0337 %		

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: WS04-17/11/2025-0.20m

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

Sample details

Sample name:	LoW Code:
WS04-17/11/2025-0.20m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
19.9% (dry weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 19.9% 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				5.79	pH		5.79	pH	5.79 pH		
2	arsenic { arsenic pentoxide }				143.5	mg/kg	1.534	183.579	mg/kg	0.0184 %	✓	
	033-004-00-6	215-116-9	1303-28-2									
3	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		<0.3	mg/kg	<0.00003 %		<LOD
	048-001-00-5											
4	copper { dicopper oxide; copper (I) oxide }				140	mg/kg	1.126	131.463	mg/kg	0.0131 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	416	mg/kg		346.956	mg/kg	0.0347 %	✓	
	082-001-00-6											
6	mercury { mercury }				2.8	mg/kg		2.335	mg/kg	0.000234 %	✓	
	080-001-00-0	231-106-7	7439-97-6									
7	nickel { nickel diiodide }				45.7	mg/kg	5.324	202.936	mg/kg	0.0203 %	✓	
	028-029-00-4	236-666-6	13462-90-3									
8	selenium { nickel selenate }				1	mg/kg	2.554	2.13	mg/kg	0.000213 %	✓	
	028-031-00-5	239-125-2	15060-62-5									
9	zinc { zinc oxide }				105	mg/kg	1.245	109.003	mg/kg	0.0109 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
10	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									
11	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				29.2	mg/kg	1.462	35.594	mg/kg	0.00356 %	✓	
		215-160-9	1308-38-9									
Total:										0.101 %		

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: WS05-17/11/2025-0.20m

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

Sample details

Sample name:	LoW Code:
WS05-17/11/2025-0.20m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
26.5%	Entry:
(dry weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 26.5% 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				4.71	pH		4.71	pH	4.71 pH		
2	arsenic { arsenic pentoxide }				16.2	mg/kg	1.534	19.643	mg/kg	0.00196 %	✓	
	033-004-00-6	215-116-9	1303-28-2									
3	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		<0.3	mg/kg	<0.00003 %		<LOD
	048-001-00-5											
4	copper { dicopper oxide; copper (I) oxide }				48	mg/kg	1.126	42.721	mg/kg	0.00427 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	132	mg/kg		104.348	mg/kg	0.0104 %	✓	
	082-001-00-6											
6	mercury { mercury }				0.3	mg/kg		0.237	mg/kg	0.0000237 %	✓	
	080-001-00-0	231-106-7	7439-97-6									
7	nickel { nickel diiodide }				17.6	mg/kg	5.324	74.077	mg/kg	0.00741 %	✓	
	028-029-00-4	236-666-6	13462-90-3									
8	selenium { nickel selenate }				1	mg/kg	2.554	2.019	mg/kg	0.000202 %	✓	
	028-031-00-5	239-125-2	15060-62-5									
9	zinc { zinc oxide }				30	mg/kg	1.245	29.519	mg/kg	0.00295 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
10	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									
11	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				24.8	mg/kg	1.462	28.653	mg/kg	0.00287 %	✓	
		215-160-9	1308-38-9									
Total:										0.0301 %		

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: WS06-17/11/2025-0.20m

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

Sample details

Sample name:	LoW Code:
WS06-17/11/2025-0.20m	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)
45.1% (dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 45.1% 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				5.94 pH		5.94	pH	5.94 pH		
2	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								
3	benzene				<5 µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
4	toluene				<5 µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								
5	ethylbenzene				<5 µg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4								
6	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]								
7	arsenic { arsenic pentoxide }				50.9 mg/kg	1.534	53.807	mg/kg	0.00538 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
8	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		<0.3	mg/kg	<0.000003 %		<LOD
	048-001-00-5										
9	copper { dicopper oxide; copper (I) oxide }				170 mg/kg	1.126	131.91	mg/kg	0.0132 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
10	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	785 mg/kg		541.006	mg/kg	0.0541 %	✓	
	082-001-00-6										
11	mercury { mercury }				3.2 mg/kg		2.205	mg/kg	0.000221 %	✓	
	080-001-00-0	231-106-7	7439-97-6								
12	nickel { nickel diiodide }				36.2 mg/kg	5.324	132.832	mg/kg	0.0133 %	✓	
	028-029-00-4	236-666-6	13462-90-3								
13	selenium { nickel selenate }				2 mg/kg	2.554	3.52	mg/kg	0.000352 %	✓	
	028-031-00-5	239-125-2	15060-62-5								

#	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	zinc { zinc oxide }				948 mg/kg	1.245	813.225 mg/kg	0.0813 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
15	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							
16	TPH (C6 to C40) petroleum group				955 mg/kg		658.167 mg/kg	0.0658 %	✓	
			TPH							
17	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				43.8 mg/kg	1.462	44.119 mg/kg	0.00441 %	✓	
		215-160-9	1308-38-9							
Total:								0.238 %		

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

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 concentration of: 6000 mg/kg (0.6%) because: No free phase encountered.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0658%)

Appendix A: Classifier defined and non GB MCL determinands

• pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

• 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

• 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.

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

Lead results not speciated.

mercury {mercury}

Worst case

nickel {nickel diiodide}

Worst case

selenium {nickel selenate}

Worst case

zinc {zinc oxide}

Zinc 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: 2026.19.6953.12548 (20 Jan 2026)

HazWasteOnline Database: 2026.19.6953.12548 (20 Jan 2026)

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

GB MCL List v7.0 - version 7.0 of 23rd September 2025

APPENDIX 10 - 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 11 - 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.

